Wet Tantalum Capacitors

Tansitor

Tansitor
ELECTRONICS INC.

Tansitor Electronics, Inc. has specialized in the manufacture of tantalum electrolytic capacitors since 1955. Today it has one of the widest ranges of tantalum capacitors available, extending from the all tantalum wet electrolytic capacitor with a reverse voltage of 3V, to the miniature conformal coated solid tantalum chip.

Tansitor has two factories with a total area of over 80,000 square feet.

Tansitor capacitors are carefully designed with reliability uppermost in mind. It is this commitment to reliability which makes Tansitor the first or only choice for those applications where tough environmental or severe electrical conditions exist.

Tansitor's engineering capability and flexibility enables it to provide a unique custom design service . This service fulfills those requirements which cannot be met with standard stock items.

Moreover, the company's production and research resources are matched by the dedication of its staff to customer service. Customer's needs are the criteria for present and future policy.

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	DESIGNATION		DESCRIPTION		PAGE
TANTALUM CASE			**All Tantalum, Wet Tantalum Capacitors**		**4**
	AQ	Qualified to Mil-C-39006/22 CLR79	Range: 1.7 to 1200µF 6 to 125 VDC		5
	AR	Qualified to Mil-C-39006/25 CLR81	Range: 6.8 to 2200µF 6 to 125 VDC	**DUAL SEAL CONSTRUCTION**	8
	HAQ HAR	200°C, High Temperature	Range: 1.7 to 2200µF 2.4 to 50 VDC		10
	ST	SuperTan®	Range: 10 to 1800µF 25 to 125 VDC		12
	STA	85°C, High Capacitance	Range: 10 to 4700µF 6 to 125 VDC		14
SILVER CASE			**W Series, Silver Case Wet Tantalum Capacitors**		**16**
	WT	Qualified to Mil-C-39006/09 CLR65	Range: 1.7 to 1200µF 6 to 125 VDC < < < Glass to Tantalum Seal > > >		19
	WC	Reference Mil-C-3965 CL64/65	Range: 1.7 to 1200µF 6 to 125 VDC < < < Elastomer Seal > > >		22
	WH	Qualified to Mil-C-3965 CL66/67	Range: 1.7 to 1200µF 6 to 125 VDC < < < Glass to Metal Seal > > >		23
	UW	High Capacitance	Range: 22 to 1500µF 6 to 125 VDC < < < Hermetic or Non Hermetic > > >		24
ASSEMBLIES	RW	Qualified to Mil-C-3965 CL55	Hermetically Packaged Assemblies of W Series Capacitors Range: 70 to 2400 µF, 15 to 150 VDC		26
	RWB	Custom Assembly	Packaged Assemblies of W Series Capacitors to Achieve Very High Capacitance Range: 340 to 22,000µF, 6 to 125 VDC		28
	CM	Custom Assembly	Custom Designed Capacitors Employing Wet, Foil or Solid Units		30
	RA	Custom Assembly	All Tantalum Capacitor Assemblies Range: 164 to 39,000µF, 6 to 125 VDC		32

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CHARACTERISTICS OF TANSITOR WET TANTALUM CAPACITORS

GENERAL

Wet tantalum capacitors provide the smallest component size for a given capacitance voltage rating. Containing a pressed, sintered anode and wet electrolyte, they are characterized by immunity to severe environmental and electrical applications. The majority of wet tantalums manufactured by Tansitor are qualified to military specifications. However, they can also be offered with enhanced operating parameters such as higher capacitance or low ESR giving superior performance for the circuit designer.

APPLICATIONS

Tansitor wet slug capacitors are well suited for use in military and industrial circuits that demand quality and reliability in filtering, bypass, coupling and energy storage. They are designed for reliable service over the temperature range of -55°C to 125°C, meeting the needs of the avionics and aerospace industry. In addition, Tansitor offers a series designed for operation to 200°C.

Due to their high reliability and superior ripple current capabilities, Tansitor's all tantalum capacitors are ideal for filtering in switching power supplies, an area where conventional capacitors cannot be used.

The low DC leakage of these porous anode tantalums makes them particularly compatible with solid state circuits, where timing accuracy is paramount. The high capacitance per unit volume makes them an excellent choice where space is at a premium.

Low ESR and high discharge current capability over the temperature range makes the Tansitor designs especially attractive for energy storage and brute force filters. This capability, coupled with a proven track record for reliability qualifies them for space applications.

Also available is Tansitor's unique all-tantalum series called "SuperTan®". "SuperTan®" offers two to three times more capacitance, lower ESR and higher ripple current ratings per case size. Therefore, "SuperTan®" is the choice where enhanced electrical performance and high reliability are demanded.

PRODUCT FEATURES

- TEMPERATURE : -55°C TO 125°C AS MILITARY PARTS, WITH OPERATION TO 200°C, USING TANSITOR'S HAQ-HAR SERIES.
- REVERSE VOLTAGE : UP TO 3 VDC @ 85°C.
- CAPACITANCE RANGE : 1.7 TO 4700µF AS INDIVIDUAL CAPACITOR CELLS.
- VOLTAGE : 6 TO 125 VDC @ 85°C AND HIGHER TEMPERATURES WITH CORRECT DERATING.
- FAILURE RATE LEVELS: 1.0, 0.1 AND 0.01 % PER 1000 HOURS, UP TO "R" FAILURE RATE.
- VIBRATION : 0.06 INCH DOUBLE AMPLITUDE OR 80G. PEAK FROM 10 to 2000 HERTZ.
- SHOCK : UP TO 500 G.

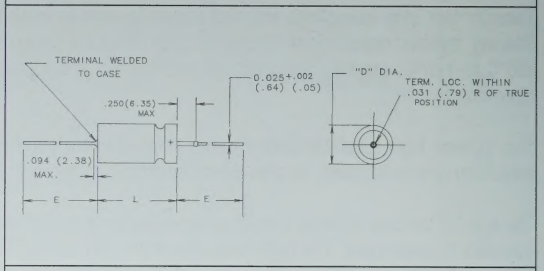
PRODUCT FEATURES

- Tantalum Case
- Elastomer and Glass to Tantalum Hermetic Seals
- Reverse Voltage Capability; 3 VDC at 85°C
- Low ESR
- Operating Range -55°C to +85°C and with Voltage Derating to +125°C
- Voltage Range 6 to 125VDC
- Long Operating and/or Shelf Life
- Capacitance Range 1.7μF to 1200μF: Type AQ
- Capacitance Range 6.8μF to 2200μF: Type AR

Tansitor's PuriTan™ capacitors are porous anode types which are housed in a tantalum case and hermetically sealed. PuriTan™ capacitors may be used in reverse voltage applications up to 3VDC at 85°C or 2VDC at 125°C and in addition offer better capacitance stability, lower ESR and higher AC ripple handling capability than the silver cased designs.

Types AQ and AR PuriTan™ capacitors are hermetically sealed with a double seal design of elastomer plus hermetic seal.

Designed specifically to meet the stringent requirement of the avionics and aerospace industries for reliable service in a variety of applications, the all tantalum PuriTan™ family represents a major breakthrough in tantalum electrolytic capacitor design. It possesses the inherent reliability of the foil tantalums for AC ripple and reverse voltage applications, yet is smaller. It has the volumetric efficiency of the wet slug tantalum, but without the limited applications; and approaches the capacitance stability of solid tantalums, yet requires no circuit impedance restriction.



Dimensions—Millimeters

Case Size	D Max Insulated	D±.41 Uninsulated	L + .79 - .41	E±6.35
1	5.56	4.78	11.51	38.10
2	7.92	7.14	16.28	57.15
3	10.31	9.52	19.46	57.15
4	10.31	9.52	26.97	57.15

Dimensions—Inches

Case Size	D Max Insulated	D±.016 Uninsulated	L + .031 - .016	E±.250
1	.219	.188	.453	1.500
2	.312	.281	.641	2.250
3	.406	.375	.766	2.250
4	.406	.375	1.062	2.250

APPLICATIONS

PuriTan™ capacitors are well suited for use in military and industrial circuits that demand quality and reliability in filtering, bypass, coupling, storage and timing applications. They are designed for reliable service over the temperature range of -55°C to +125°C, and therefore, meet the needs of the avionics and aerospace industry.

Due to their superior ripple capabilities, PuriTan™ capacitors are exceptionally well suited for filtering in switching regulator applications, an area where conventional wets are not normally used due to the relative high ripple current ratings required.

Notes:

1. Material at egress is tantalum feed thru.
2. Insulation: Sleeving will lap over the ends of the capacitor body.
3. Leads: Both leads are tinned nickel. (solderable & weldable)

AC Ripple:

Ripple current ratings by part number at 85°C and 40Khz are included in the rating table.

Correction factors for other temperatures and frequencies are located on page 7.

Polar capacitors must be biased such that the negative peak does not exceed -3 volts, and the positive peak does not exceed the voltage rating of the capacitor.

MIL 39006/22—0000 Series

Case Size	Cap @ 25°C & 120Hz µF	Cap Tol ±%	Military Type Designation ② MIL-C-39006/22 Failure Rate Level M	P	R	S	Max ESR @ 120Hz ohms	Max DCL µA 25°C	85°C & 125°C	AC Ripple 85°C 40Khz mA rms	Max DF @ 120Hz %	Max Imp @ -55°C & 120Hz ohms	Tansitor Part Number ①②
			6 VDC @ 85°C						**4 VDC @ 125°C**				
T1	30	20	0001	0221	0441	0661	4.0	1	2.0	820	9.0	100	AQ30 — 6T1M
T1	30	10	0002	0222	0442	0662	4.0	1	2.0	820	9.0	100	AQ30 — 6T1K
T1	30	5	0003	0223	0443	0663	4.0	1	2.0	820	9.0	100	AQ30 — 6T1J
T1	68	20	0004	0224	0444	0664	2.9	1	2.0	960	15.0	60	AQ68 — 6T1M
T1	68	10	0005	0225	0445	0665	2.9	1	2.0	960	15.0	60	AQ68 — 6T1K
T1	68	5	0006	0226	0446	0666	2.9	1	2.0	960	15.0	60	AQ68 — 6T1J
T2	140	20	0007	0227	0447	0667	1.9	1	3.0	1200	21.0	40	AQ140 — 6T2M
T2	140	10	0008	0228	0448	0668	1.9	1	3.0	1200	21.0	40	AQ140 — 6T2K
T2	140	5	0009	0229	0449	0669	1.9	1	3.0	1200	21.0	40	AQ140 — 6T2J
T2	270	20	0010	0230	0450	0670	2.2	1	6.5	1375	45.0	25	AQ270 — 6T2M
T2	270	10	0011	0231	0451	0671	2.2	1	6.5	1375	45.0	25	AQ270 — 6T2K
T2	270	5	0012	0232	0452	0672	2.2	1	6.5	1375	45.0	25	AQ270 — 6T2J
T3	330	20	0013	0233	0453	0673	1.5	2	7.9	1800	36.0	20	AQ330 — 6T3M
T3	330	10	0014	0234	0454	0674	1.5	2	7.9	1800	36.0	20	AQ330 — 6T3K
T3	330	5	0015	0235	0455	0675	1.5	2	7.9	1800	36.0	20	AQ330 — 6T3J
T3	560	20	0016	0236	0456	0676	1.3	2	13.0	1900	55.0	25	AQ560 — 6T3M
T3	560	10	0017	0237	0457	0677	1.3	2	13.0	1900	55.0	25	AQ560 — 6T3K
T3	560	5	0018	0238	0458	0678	1.3	2	13.0	1900	55.0	25	AQ560 — 6T3J
T4	1200	20	0019	0239	0459	0679	1.0	3	14.0	2265	90.0	20	AQ1200 — 6T4M
T4	1200	10	0020	0240	0460	0680	1.0	3	14.0	2265	90.0	20	AQ1200 — 6T4K
			8 VDC @ 85°C						**5 VDC @ 125°C**				
T1	25	20	0021	0241	0461	0681	4.0	1	2.0	820	7.5	100	AQ25 — 8T1M
T1	25	10	0022	0242	0462	0682	4.0	1	2.0	820	7.5	100	AQ25 — 8T1K
T1	25	5	0023	0243	0463	0683	4.0	1	2.0	820	7.5	100	AQ25 — 8T1J
T1	56	20	0024	0244	0464	0684	3.2	1	2.0	900	14.0	59	AQ56 — 8T1M
T1	56	10	0025	0245	0465	0685	3.2	1	2.0	900	14.0	59	AQ56 — 8T1K
T1	56	5	0026	0246	0466	0686	3.2	1	2.0	900	14.0	59	AQ56 — 8T1J
T2	120	20	0027	0247	0467	0687	2.4	1	2.0	1220	20.0	50	AQ120 — 8T2M
T2	120	10	0028	0248	0468	0688	2.4	1	2.0	1220	20.0	50	AQ120 — 8T2K
T2	120	5	0029	0249	0469	0689	2.4	1	2.0	1220	20.0	50	AQ120 — 8T2J
T2	220	20	0030	0250	0470	0690	2.2	1	7.0	1370	37.0	30	AQ220 — 8T2M
T2	220	10	0031	0251	0471	0691	2.2	1	7.0	1370	37.0	30	AQ220 — 8T2K
T2	220	5	0032	0252	0472	0692	2.2	1	7.0	1370	37.0	30	AQ220 — 8T2J
T3	290	20	0033	0253	0473	0693	1.6	2	6.0	1770	34.0	25	AQ290 — 8T3M
T3	290	10	0034	0254	0474	0694	1.6	2	6.0	1770	34.0	25	AQ290 — 8T3K
T3	290	5	0035	0255	0475	0695	1.6	2	6.0	1770	34.0	25	AQ290 — 8T3J
T3	430	20	0036	0256	0476	0696	1.2	2	14.0	1825	46.0	25	AQ430 — 8T3M
T3	430	10	0037	0257	0477	0697	1.2	2	14.0	1825	46.0	25	AQ430 — 8T3K
T3	430	5	0038	0258	0478	0698	1.2	2	14.0	1825	46.0	25	AQ430 — 8T3J
T4	850	20	0039	0259	0479	0699	0.8	4	16.0	2330	60.0	22	AQ850 — 8T4M
T4	850	10	0040	0260	0480	0700	0.8	4	16.0	2330	60.0	22	AQ850 — 8T4K
			10 VDC @ 85°C						**7 VDC @ 125°C**				
T1	20	20	0041	0261	0481	0701	4.0	1	2.0	820	6.0	175	AQ20 — 10T1M
T1	20	10	0042	0262	0482	0702	4.0	1	2.0	820	6.0	175	AQ20 — 10T1K
T1	20	5	0043	0263	0483	0703	4.0	1	2.0	820	6.0	175	AQ20 — 10T1J
T1	47	20	0044	0264	0484	0704	3.8	1	2.0	855	13.0	100	AQ47 — 10T1M
T1	47	10	0045	0265	0485	0705	3.8	1	2.0	855	13.0	100	AQ47 — 10T1K
T1	47	5	0046	0266	0486	0706	3.8	1	2.0	855	13.0	100	AQ47 — 10T1J
T2	100	20	0047	0267	0487	0707	2.0	1	4.0	1200	15.0	60	AQ100 — 10T2M
T2	100	10	0048	0268	0488	0708	2.0	1	4.0	1200	15.0	60	AQ100 — 10T2K
T2	100	5	0049	0269	0489	0709	2.0	1	4.0	1200	15.0	60	AQ100 — 10T2J
T2	180	20	0050	0270	0490	0710	2.2	1	7.0	1365	30.0	40	AQ180 — 10T2M
T2	180	10	0051	0271	0491	0711	2.2	1	7.0	1365	30.0	40	AQ180 — 10T2K
T2	180	5	0052	0272	0492	0712	2.2	1	7.0	1365	30.0	40	AQ180 — 10T2J
T3	250	20	0053	0273	0493	0713	1.6	2	10.0	1720	30.0	30	AQ250 — 10T3M
T3	250	10	0054	0274	0494	0714	1.6	2	10.0	1720	30.0	30	AQ250 — 10T3K
T3	250	5	0055	0275	0495	0715	1.6	2	10.0	1720	30.0	30	AQ250 — 10T3J
T3	390	20	0056	0276	0496	0716	1.6	2	16.0	1800	44.0	25	AQ390 — 10T3M
T3	390	10	0057	0277	0497	0717	1.6	2	16.0	1800	44.0	25	AQ390 — 10T3K
T3	390	5	0058	0278	0498	0718	1.6	2	16.0	1800	44.0	25	AQ390 — 10T3J
T4	750	20	0059	0279	0499	0719	0.9	4	16.0	2360	50.0	23	AQ750 — 10T4M
T4	750	10	0060	0280	0500	0720	0.9	4	16.0	2360	50.0	23	AQ750 — 10T4K
			15 VDC @ 85°C						**10 VDC @ 125°C**				
T1	15	20	0061	0281	0501	0721	4.3	1	2.0	780	5.0	155	AQ15 — 15T1M
T1	15	10	0062	0282	0502	0722	4.3	1	2.0	780	5.0	155	AQ15 — 15T1K
T1	15	5	0063	0283	0503	0723	4.3	1	2.0	780	5.0	155	AQ15 — 15T1J
T1	33	20	0064	0284	0504	0724	4.0	1	2.0	820	10.0	90	AQ33 — 15T1M
T1	33	10	0065	0285	0505	0725	4.0	1	2.0	820	10.0	90	AQ33 — 15T1K
T1	33	5	0066	0286	0506	0726	4.0	1	2.0	820	10.0	90	AQ33 — 15T1J
T2	70	20	0067	0287	0507	0727	2.5	1	4.0	1150	13.0	75	AQ70 — 15T2M
T2	70	10	0068	0288	0508	0728	2.5	1	4.0	1150	13.0	75	AQ70 — 15T2K
T2	70	5	0069	0289	0509	0729	2.5	1	4.0	1150	13.0	75	AQ70 — 15T2J
T2	120	20	0070	0290	0510	0730	2.0	1	7.0	1450	18.0	50	AQ120 — 15T2M
T2	120	10	0071	0291	0511	0731	2.0	1	7.0	1450	18.0	50	AQ120 — 15T2K
T2	120	5	0072	0292	0512	0732	2.0	1	7 0	1450	18.0	50	AQ120 — 15T2J
T3	170	20	0073	0293	0513	0733	1.9	2	10.0	1480	25.0	35	AQ170 — 15T3M
T3	170	10	0074	0294	0514	0734	1.9	2	10.0	1480	25.0	35	AQ170 — 15T3K
T3	170	5	0075	0295	0515	0735	1.9	2	10.0	1480	25.0	35	AQ170 — 15T3J
T3	270	20	0076	0296	0516	0736	1.6	2	16.0	1740	32.0	30	AQ270 — 15T3M
T3	270	10	0077	0297	0517	0737	1.6	2	16.0	1740	32.0	30	AQ270 — 15T3K
T3	270	5	0078	0298	0518	0738	1.6	2	16.0	1740	32.0	30	AQ270 — 15T3J
T4	540	20	0079	0299	0519	0739	1.0	6	24.0	2330	40.0	23	AQ540 — 15T4M
T4	540	10	0080	0300	0520	0740	1.0	6	24.0	2330	40.0	23	AQ540 — 15T4K

① Complete Tansitor Part Number by adding letter M, P, or R for Failure Rate Level and I for Insulation.
② For high vibratlon and shock requirements, add suffix "H".

Case Size	Cap @ 25°C & 120Hz µF	Cap Tol ±%	Military Type Designation ② MIL-C-39006/22 — Failure Rate Level M	P	R	S	Max ESR @ 120Hz ohms	Max DCL µA 25°C	Max DCL µA 85°C & 125°C	AC Ripple 85°C 40Khz mA rms	Max DF @ 120Hz %	Max Imp @ -55°C & 120Hz ohms	Tansitor Part Number ①②
			25 VDC @ 85°C						**15 VDC @ 125°C**				
T1	10	20	0081	0301	0521	0741	5.2	1	2	715	4.0	220	AQ10 — 25T1M
T1	10	10	0082	0302	0522	0742	5.2	1	2	715	4.0	220	AQ10 — 25T1K
T1	10	5	0083	0303	0523	0743	5.2	1	2	715	4.0	220	AQ10 — 25T1J
T1	22	20	0084	0304	0524	0744	4.0	1	2	825	6.6	140	AQ22 — 25T1M
T1	22	10	0085	0305	0525	0745	4.0	1	2	825	6.6	140	AQ22 — 25T1K
T1	22	5	0086	0306	0526	0746	4.0	1	2	825	6.6	140	AQ22 — 25T1J
T2	50	20	0087	0307	0527	0747	3.1	1	2	1130	11.0	70	AQ50 — 25T2M
T2	50	10	0088	0308	0528	0748	3.1	1	2	1130	11.0	70	AQ50 — 25T2K
T2	50	5	0089	0309	0529	0749	3.1	1	2	1130	11.0	70	AQ50 — 25T2J
T2	100	20	0090	0310	0530	0750	2.0	1	10	1435	15.0	50	AQ100 — 25T2M
T2	100	10	0091	0311	0531	0751	2.0	1	10	1435	15.0	50	AQ100 — 25T2K
T2	100	5	0092	0312	0532	0752	2.0	1	10	1435	15.0	50	AQ100 — 25T2J
T3	120	20	0093	0313	0533	0753	2.3	2	6	1450	21.0	38	AQ120 — 25T3M
T3	120	10	0094	0314	0534	0754	2.3	2	6	1450	21.0	38	AQ120 — 25T3K
T3	120	5	0095	0315	0535	0755	2.3	2	6	1450	21.0	38	AQ120 — 25T3J
T3	180	20	0096	0316	0536	0756	1.9	2	18	1525	26.0	32	AQ180 — 25T3M
T3	180	10	0097	0317	0537	0757	1.9	2	18	1525	26.0	32	AQ180 — 25T3K
T3	180	5	0098	0318	0538	0758	1.9	2	18	1525	26.0	32	AQ180 — 25T3J
T4	350	20	0099	0319	0539	0759	1.8	7	28	1970	35.0	24	AQ350 — 25T4M
T4	350	10	0100	0320	0540	0760	1.8	7	28	1970	35.0	24	AQ350 — 25T4K
			30 VDC @ 85°C						**20 VDC @ 125°C**				
T1	8	20	0101	0321	0541	0761	6.5	1	2	640	4.0	275	AQ8 — 30T1M
T1	8	10	0102	0322	0542	0762	6.5	1	2	640	4.0	275	AQ8 — 30T1K
T1	8	5	0103	0323	0543	0763	6.5	1	2	640	4.0	275	AQ8 — 30T1J
T1	15	20	0104	0324	0544	0764	4.4	1	2	780	5.0	175	AQ15 — 30T1M
T1	15	10	0105	0325	0545	0765	4.4	1	2	780	5.0	175	AQ15 — 30T1K
T1	15	5	0106	0326	0546	0766	4.4	1	2	780	5.0	175	AQ15 — 30T1J
T2	40	20	0107	0327	0547	0767	3.3	1	5	1120	10.0	65	AQ40 — 30T2M
T2	40	10	0108	0328	0548	0768	3.3	1	5	1120	10.0	65	AQ40 — 30T2K
T2	40	5	0109	0329	0549	0769	3.3	1	5	1120	10.0	65	AQ40 — 30T2J
T2	68	20	0110	0330	0550	0770	2.5	1	8	1285	13.0	60	AQ68 — 30T2M
T2	68	10	0111	0331	0551	0771	2.5	1	8	1285	13.0	60	AQ68 — 30T2K
T2	68	5	0112	0332	0552	0772	2.5	1	8	1285	13.0	60	AQ68 — 30T2J
T3	100	20	0113	0333	0553	0773	2.3	2	12	1450	17.0	40	AQ100 — 30T3M
T3	100	10	0114	0334	6554	0774	2.3	2	12	1450	17.0	40	AQ100 — 30T3K
T3	100	5	0115	0335	0555	0775	2.3	2	12	1450	17.0	40	AQ100 — 30T3J
T3	150	20	0116	0336	0556	0776	2.0	2	18	1525	23.0	35	AQ150 — 30T3M
T3	150	10	0117	0337	0557	0777	2.0	2	18	1525	23.0	35	AQ150 — 30T3K
T3	150	5	0118	0338	0558	0778	2.0	2	18	1525	23.0	35	AQ150 — 30T3J
T4	300	20	0119	0339	0559	0779	1.3	8	32	1950	31.0	25	AQ300 — 30T4M
T4	300	10	0120	0340	0560	0780	1.3	8	32	1950	31.0	25	AQ300 — 30T4K
			50 VDC @ 85°C						**30 VDC @ 125°C**				
T1	5	20	0121	0341	0561	0781	8.0	1	2	580	3.0	400	AQ5 — 50T1M
T1	5	10	0122	0342	0562	0782	8.0	1	2	580	3.0	400	AQ5 — 50T1K
T1	5	5	0123	0343	0563	0783	6.0	1	2	580	3.0	400	AQ5 — 50T1J
T1	10	20	0124	0344	0564	0784	5.3	1	2	715	4.0	250	AQ10 — 50T1M
T1	10	10	0125	0345	0565	0785	5.3	1	2	715	4.0	250	AQ10 — 50T1K
T1	10	5	0126	0346	0566	0786	5.3	1	2	715	4.0	250	AQ10 — 50T1J
T2	25	20	0127	0347	0567	0787	4.2	1	5	1005	8.0	95	AQ25 — 50T2M
T2	25	10	0128	0348	0568	0788	4.2	1	5	1005	8.0	95	AQ25 — 50T2K
T2	25	5	0129	0349	0569	0789	4.2	1	5	1005	8.0	95	AQ25 — 50T2J
T2	47	20	0130	0350	0570	0790	3.1	1	9	1155	11.0	70	AQ47 — 50T2M
T2	47	10	0131	0351	0571	0791	3.1	1	9	1155	11.0	70	AQ47 — 50T2K
T2	47	5	0132	0352	0572	0792	3.1	1	9	1155	11.0	70	AQ47 — 50T2J
T3	60	20	0133	0353	0573	0793	2.7	2	12	1335	12.0	45	AQ60 — 50T3M
T3	60	10	0134	0354	0574	0794	2.7	2	12	1335	12.0	45	AQ60 — 50T3K
T3	60	5	0135	0355	0575	0795	2.7	2	12	1335	12.0	45	AQ60 — 50T3J
T3	82	20	0136	0356	0576	0796	2.7	2	16	1400	15.0	45	AQ82 — 50T3M
T3	82	10	0137	0357	0577	0797	2.7	2	16	1400	15.0	45	AQ82 — 50T3K
T3	82	5	0138	0358	0578	0798	2.7	2	16	1400	15.0	45	AQ82 — 50T3J
T4	160	20	0139	0359	0579	0799	1.4	8	32	1900	17.0	27	AQ160 — 50T4M
T4	160	10	0140	0360	0580	0800	1.4	8	32	1900	17.0	27	AQ160 — 50T4K
			60 VDC @ 85°C						**40 VDC @ 125°C**				
T1	40	20	0141	0361	0581	0801	9.5	1	2	525	2.8	550	AQ4 — 60T1M
T1	40	10	0142	0362	0582	0802	9.5	1	2	525	2.8	550	AQ4 — 60T1K
T1	40	5	0143	0363	0583	0803	9.5	1	2	525	2.8	550	AQ4 — 60T1J
T1	82	20	0144	0364	0584	0804	6.5	1	2	625	4.0	275	AQ8.2 — 60T1M
T1	82	10	0145	0365	0585	0805	6.5	1	2	625	4.0	275	AQ8.2 — 60T1K
T1	82	5	0146	0366	0586	0806	6.5	1	2	625	4.0	275	AQ8.2 — 60T1J
T2	200	20	0147	0367	0587	0807	4.9	1	5	930	7.0	105	AQ20 — 60T2M
T2	200	10	0148	0368	0588	0808	4.9	1	5	930	7.0	105	AQ20 — 60T2K
T2	200	5	0149	0369	0589	0809	4.9	1	5	930	7.0	105	AQ20 — 60T2J
T2	390	20	0150	0370	0590	0810	3.4	1	9	1110	10.0	90	AQ39 — 60T2M
T2	390	10	0151	0371	0591	0811	3.4	1	9	1110	10.0	90	AQ39 — 60T2K
T2	390	5	0152	0372	0592	0812	3.4	1	9	1110	10.0	90	AQ39 — 60T2J
T3	500	20	0153	0373	0593	0813	2.7	2	12	1330	10.0	50	AQ50 — 60T3M
T3	500	10	0154	0374	0594	0814	2.7	2	12	1330	10.0	50	AQ50 — 60T3K
T3	500	5	0155	0375	0595	0815	2.7	2	12	1330	10.0	50	AQ50 — 60T3J
T3	680	20	0156	0376	0596	0816	2.5	2	16	1365	13.0	50	AQ68 — 60T3M
T3	680	10	0157	0377	0597	0817	2.5	2	16	1365	13.0	50	AQ68 — 60T3K
T3	680	5	0158	0378	0598	0818	2.5	2	16	1365	13.0	50	AQ68 — 60T3J
T4	1400	20	0159	0379	0599	0819	1.5	8	32	1850	16.0	28	AQ140 — 60T4M
T4	1400	10	0160	0380	0600	0820	1.5	8	32	1850	16.0	28	AQ140 — 60T4K

① Complete Tansitor Part Number by adding letter M, P, or R for Failure Rate Level and I for Insulation.
② For high vibration and shock requirements, add suffix "H".

Case Size	Cap @ 25°C & 120Hz µF	Cap Tol ±%	Military Type Designation ② MIL-C-39006/22 Failure Rate Level M	P	R	S	Max ESR @ 120Hz ohms	Max DCL µA 25°C	85°C & 125°C	AC Ripple 85°C 40Khz mA rms	Max DF @ 120Hz %	Max Imp @ -55°C & 120Hz ohms	Tansitor Part Number ①②
			75 VDC @ 85°C						**50 VDC @ 125°C**				
T1	3.5	20	0161	0381	0601	0821	10.0	1	2	525	2.5	650	AQ3.5 — 75T1M
T1	3.5	10	0162	0382	0602	0822	10.0	1	2	525	2.5	650	AQ3.5 — 75T1K
T1	3.5	5	0163	0383	0603	0823	10.0	1	2	525	2.5	650	AQ3.5 — 75T1J
T1	6.8	20	0164	0384	0604	0824	7.0	1	2	610	3.5	300	AQ6.8 — 75T1M
T1	6.8	10	0165	0385	0605	0825	7.0	1	2	610	3.5	300	AQ6.8 — 75T1K
T1	6.8	5	0166	0386	0606	0826	7.0	1	2	610	3.5	300	AQ6.8 — 75T1J
T2	15.0	20	0167	0387	0607	0827	5.2	1	5	890	6.0	150	AQ15 — 75T2M
T2	15.0	10	0168	0388	0608	0828	5.2	1	5	890	6.0	150	AQ15 — 75T2K
T2	15.0	5	0169	0389	0609	0829	5.2	1	5	890	6.0	150	AQ15 — 75T2J
T2	33.0	20	0170	0390	0610	0830	4.0	1	10	1000	10.0	90	AQ33 — 75T2M
T2	33.0	10	0171	0391	0611	0831	4.0	1	10	1000	10.0	90	AQ33 — 75T2K
T2	33.0	5	0172	0392	0612	0832	4.0	1	10	1000	10.0	90	AQ33 — 75T2J
T3	40.0	20	0173	0393	0613	0833	3.0	2	12	1250	9.0	60	AQ40 — 75T3M
T3	40.0	10	0174	0394	0614	0834	3.0	2	12	1250	9.0	60	AQ40 — 75T3K
T3	40.0	5	0175	0395	0615	0835	3.0	2	12	1250	9.0	60	AQ40 — 75T3J
T3	56.0	20	0176	0396	0616	0836	2.6	2	17	1335	11.0	60	AQ56 — 75T3M
T3	56.0	10	0177	0397	0617	0837	2.6	2	17	1335	11.0	60	AQ56 — 75T3K
T3	56.0	5	0178	0398	0618	0838	2.6	2	17	1335	11.0	60	AQ56 — 75T3J
T4	110.0	20	0179	0399	0619	0839	1.5	9	36	1850	12.0	29	AQ110 — 75T4M
T4	110.0	10	0180	0400	0620	0840	1.5	9	36	1850	12.0	29	AQ110 — 75T4K
			100 VDC @ 85°C						**65 VDC @ 125°C**				
T1	2.5	20	0181	0401	0621	0841	10.6	1	2	505	2.0	950	AQ2.5 — 100T1M
T1	2.5	10	0182	0402	0622	0842	10.6	1	2	505	2.0	950	AQ2.5 — 100T1K
T1	2.5	5	0183	0403	0623	0843	10.6	1	2	505	2.0	950	AQ2.5 — 100T1J
T1	4.7	20	0184	0404	0624	0844	8.5	1	2	565	3.0	500	AQ4.7 — 100T1M
T1	4.7	10	0185	0405	0625	0845	8.5	1	2	565	3.0	500	AQ4.7 — 100T1K
T1	4.7	5	0186	0406	0626	0846	8.5	1	2	565	3.0	500	AQ4.7 — 100T1J
T2	11.0	20	0187	0407	0627	0847	6.0	1	4	835	5.0	200	AQ11 — 100T2M
T2	11.0	10	0188	0408	0628	0848	6.0	1	4	835	5.0	200	AQ11 — 100T2K
T2	11.0	5	0189	0409	0629	0849	6.0	1	4	835	5.0	200	AQ11 — 100T2J
T2	22.0	20	0190	0410	0630	0850	4.5	1	9	965	7.5	100	AQ22 — 100T2M
T2	22.0	10	0191	0411	0631	0851	4.5	1	9	965	7.5	100	AQ22 — 100T2K
T2	22.0	5	0192	0412	0632	0852	4.5	1	9	965	7.5	100	AQ22 — 100T2J
T3	30.0	20	0193	0413	0633	0853	3.1	2	12	1240	7.0	80	AQ30 — 100T3M
T3	30.0	10	0194	0414	0634	0854	3.1	2	12	1240	7.0	80	AQ30 — 100T3K
T3	30.0	5	0195	0415	0635	0855	3.1	2	12	1240	7.0	80	AQ30 — 100T3J
T3	43.0	20	0196	0416	0636	0856	2.6	2	17	1335	8.5	70	AQ43 — 100T3M
T3	43.0	10	0197	0417	0637	0857	2.6	2	17	1335	8.5	70	AQ43 — 100T3K
T3	43.0	5	0198	0418	0638	0858	2.6	2	17	1335	8.5	70	AQ43 — 100T3J
T4	86.0	20	0199	0419	0639	0859	1.6	9	36	1800	10.0	30	AQ86 — 100T4M
T4	86.0	10	0200	0420	0640	0860	1.6	9	36	1800	10.0	30	AQ86 — 100T4K
			125 VDC @ 85°C						**85 VDC @ 125°C**				
T1	1.7	20	0201	0421	0641	0861	15.6	1	2	415	2.0	1250	AQ1.7 — 125T1M
T1	1.7	10	0202	0422	0642	0862	15.6	1	2	415	2.0	1250	AQ1.7 — 125T1K
T1	1.7	5	0203	0423	0643	0863	15.6	1	2	415	2.0	1250	AQ1.7 — 125T1J
T1	3.6	20	0204	0424	0644	0864	10.0	1	2	520	2.7	600	AQ3.6 — 125T1M
T1	3.6	10	0205	0425	0645	0865	10.0	1	2	520	2.7	600	AQ3.6 — 125T1K
T1	3.6	5	0206	0426	0646	0866	10.0	1	2	520	2.7	600	AQ3.6 — 125T1J
T2	9.0	20	0207	0427	0647	0867	7.4	1	5	755	5.0	240	AQ9 — 125T2M
T2	9.0	10	0208	0428	0648	0868	7.4	1	5	755	5.0	240	AQ9 — 125T2K
T2	9.0	5	0209	0429	0649	0869	7.4	1	5	755	5.0	240	AQ9 — 125T2J
T2	14.0	20	0210	0430	0650	0870	5.7	1	7	860	6.0	167	AQ14 — 125T2M
T2	14.0	10	0211	0431	0651	0871	5.7	1	7	860	6.0	167	AQ14 — 125T2K
T2	14.0	5	0212	0432	0652	0872	5.7	1	7	860	6.0	167	AQ14 — 125T2J
T3	18.0	20	0213	0433	0653	0873	3.7	2	9	1130	5.0	129	AQ18 — 125T3M
T3	18.0	10	0214	0434	0654	0874	3.7	2	9	1130	5.0	129	AQ18 — 125T3K
T3	18.0	5	0215	0435	0655	0875	3.7	2	9	1130	5.0	129	AQ18 — 125T3J
T3	25.0	20	0216	0436	0656	0876	3.2	2	13	1200	6.0	93	AQ25 — 125T3M
T3	25.0	10	0217	0437	0657	0877	3.2	2	13	1200	6.0	93	AQ25 — 125T3K
T3	25.0	5	0218	0438	0658	0878	3.2	2	13	1200	6.0	93	AQ25 — 125T3J
T4	56.0	20	0219	0439	0659	0879	1.6	10	40	1800	6.5	32	AQ56 — 125T4M
T4	56.0	10	0220	0440	0660	0880	1.6	10	40	1800	6.5	32	AQ56 — 125T4K

① Complete Tansitor Part Number by adding letter M, P, or R for Failure Rate Level and I for Insulation.
② For high vibration and shock requirements, add suffix "H".

RIPPLE CURRENT MULTIPLIERS VS FREQUENCY, TEMPERATURE AND APPLIED PEAK VOLTAGE.

Frequency of applied ripple current		120 Hz				800 Hz				1 Khz				10 Khz				40 Khz				100 Khz			
Ambient still air temperature in °C		≤55	85	105	125	≤55	85	105	125	≤55	85	105	125	≤55	85	105	125	≤55	85	105	125	≤55	85	105	125
% of 85°C rated peak voltage	100%	.60	.39	-	-	.71	.43	-	-	.72	.45	-	-	.88	.55	-	-	1.0	.63	-	-	1.1	.69	-	-
	90%	.60	.46	-	-	.71	.55	-	-	.72	.55	-	-	.88	.67	-	-	1.0	.77	-	-	1.1	.85	-	-
	80%	.60	.52	.35	-	.71	.62	.42	-	.72	.62	.42	-	.88	.76	.52	-	1.0	.87	.59	-	1.1	.96	.65	-
	70%	.60	.58	.44	-	.71	.69	.52	-	.72	.70	.52	-	.88	.85	.64	-	1.0	.97	.73	-	1.1	1.07	.80	-
	66 2/3%	.60	.60	.46	.27	.71	.71	.55	.32	.72	.72	.55	.32	.88	.88	.68	.40	1.0	1.0	.77	.45	1.1	1.1	.85	.50

EXTENDED RANGE

Cap @ 25°C & 120Hz µF	Cap Tol ±%	Military Type Designation ② MIL-C-39006/25 Failure Rate Level M	P	R	S	Max ESR @ 120Hz ohms	Max DCL µA 25°C	85°C & 125°C	AC Ripple 85°C 40Khz mA rms	Max DF @ 120Hz %	Max Imp @ -55°C & 120Hz ohms	Case Size	Tansitor Part Number ①②③
6 VDC @ 85°C										**4 VDC @ 125°C**			
220	20	0001	0089	0177	0265	3.02	2	9	1000	50	36	T1	AR220 — 6T1M
220	10	0002	0090	0178	0266	3.02	2	9	1000	50	36	T1	AR220 — 6T1K
820	20	0003	0091	0179	0267	2.51	3	14	1500	155	18	T2	AR820 — 6T2M
820	10	0004	0092	0180	0268	2.51	3	14	1500	155	18	T2	AR820 — 6T2K
1500	20	0005	0093	0181	0269	1.52	5	20	1900	172	18	T3	AR1500 — 6T3M
1500	10	0006	0094	0182	0270	1.52	5	20	1900	172	18	T3	AR1500 — 6T3K
2200	20	0007	0095	0183	0271	1.03	6	24	2300	170	13	T4	AR2200 — 6T4M
2200	10	0008	0096	0184	0272	1.03	6	24	2300	170	13	T4	AR2200 — 6T4K
8 VDC @ 85°C										**5 VDC @ 125°C**			
180	20	0009	0097	0185	0273	3.03	2	9	1000	41	45	T1	AR180 — 8T1M
180	10	0010	0098	0186	0274	3.03	2	9	1000	41	45	T1	AR180 — 8T1K
680	20	0011	0099	0187	0275	2.54	3	14	1500	130	22	T2	AR680 — 8T2M
680	10	0012	0100	0188	0276	2.54	3	14	1500	130	22	T2	AR680 — 8T2K
1500	20	0013	0101	0189	0277	1.51	5	20	1900	170	18	T3	AR1500 — 8T3M
1500	10	0014	0102	0190	0278	1.51	5	20	1900	170	18	T3	AR1500 — 8T3K
1800	20	0015	0103	0191	0279	1.02	7	25	2300	138	14	T4	AR1800 — 8T4M
1800	10	0016	0104	0192	0280	1.02	7	25	2300	138	14	T4	AR1800 — 8T4K
10 VDC @ 85°C										**7 VDC @ 125°C**			
150	20	0017	0105	0193	0281	3.01	2	9	900	34	54	T1	AR150 — 10T1M
150	10	0018	0106	0194	0282	3.01	2	9	900	34	54	T1	AR150 — 10T1K
560	20	0019	0107	0195	0283	2.52	3	16	1450	106	27	T2	AR560 — 10T2M
560	10	0020	0108	0196	0284	2.52	3	16	1450	106	27	T2	AR560 — 10T2K
1200	20	0021	0109	0197	0285	1.52	5	20	1850	137	18	T3	AR1200 — 10T3M
1200	10	0022	0110	0198	0286	1.52	5	20	1850	137	18	T3	AR1200 — 10T3K
1500	20	0023	0111	0199	0287	1.01	7	25	2300	114	15	T4	AR1500 — 10T4M
1500	10	0024	0112	0200	0288	1.01	7	25	2300	114	15	T4	AR1500 — 10T4K
15 VDC @ 85°C										**10 VDC @ 125°C**			
100	20	0025	0113	0201	0289	3.99	2	9	900	30	72	T1	AR100 — 15T1M
100	10	0026	0114	0202	0290	3.99	2	9	900	30	72	T1	AR100 — 15T1K
390	20	0027	0115	0203	0291	2.52	3	16	1450	74	31	T2	AR390 — 15T2M
390	10	0028	0116	0204	0292	2.52	3	16	1450	74	31	T2	AR390 — 15T2K
820	20	0029	0117	0205	0293	1.80	6	24	1800	111	22	T3	AR820 — 15T3M
820	10	0030	0118	0206	0294	1.80	6	24	1800	111	22	T3	AR820 — 15T3K
1000	20	0031	0119	0207	0295	1.22	8	32	2300	92	17	T4	AR1000 — 15T4M
1000	10	0032	0120	0208	0296	1.22	8	32	2300	92	17	T4	AR1000 — 15T4K
25 VDC @ 85°C										**15 VDC @ 125°C**			
68	20	0033	0121	0209	0297	4.30	2	9	850	22	90	T1	AR68 — 25T1M
68	10	0034	0122	0210	0298	4.30	2	9	850	22	90	T1	AR68 — 25T1K
270	20	0035	0123	0211	0299	2.71	3	16	1400	55	33	T2	AR270 — 25T2M
270	10	0036	0124	0212	0300	2.71	3	16	1400	55	33	T2	AR270 — 25T2K
560	20	0037	0125	0213	0301	1.80	7	28	1750	76	24	T3	AR560 — 25T3M
560	10	0038	0126	0214	0302	1.80	7	28	1750	76	24	T3	AR560 — 25T3K
680	20	0039	0127	0215	0303	1.23	8	32	2100	63	19	T4	AR680 — 25T4M
680	10	0040	0128	0216	0304	1.23	8	32	2100	63	19	T4	AR680 — 25T4K
30 VDC @ 85°C										**20 VDC @ 125°C**			
56	20	0041	0129	0217	0305	5.22	2	9	800	22	100	T1	AR56 — 30T1M
56	10	0042	0130	0218	0306	5.22	2	9	800	22	100	T1	AR56 — 30T1K
220	20	0043	0131	0219	0307	2.54	3	16	1200	42	36	T2	AR220 — 30T2M
220	10	0044	0132	0220	0308	2.54	3	16	1200	42	36	T2	AR220 — 30T2K
470	20	0045	0133	0221	0309	1.81	8	32	1500	64	25	T3	AR470 — 30T3M
470	10	0046	0134	0222	0310	1.81	8	32	1500	64	25	T3	AR470 — 30T3K
560	20	0047	0135	0223	0311	1.31	9	36	2000	55	20	T4	AR560 — 30T4M
560	10	0048	0136	0024	0312	1.31	9	36	2000	55	20	T4	AR560 — 30T4K
50 VDC @ 85°C										**30 VDC @ 125°C**			
33	20	0049	0137	0225	0313	4.96	2	9	700	12.3	135	T1	AR33 — 50T1M
33	10	0050	0138	0226	0314	4.96	2	9	700	12.3	135	T1	AR33 — 50T1K
120	20	0051	0139	0227	0315	2.49	4	24	1200	22.5	49	T2	AR120 — 50T2M
120	10	0052	0140	0228	0316	2.49	4	24	1200	22.5	49	T2	AR120 — 50T2K
270	20	0053	0141	0229	0317	1.82	8	32	1450	37	29	T3	AR270 — 50T3M
270	10	0054	0142	0230	0318	1.82	8	32	1450	37	29	T3	AR270 — 50T3K
330	20	0055	0143	0231	0319	1.53	9	36	1900	38	22	T4	AR330 — 50T4M
330	10	0056	0144	0232	0320	1.53	9	36	1900	38	22	T4	AR330 — 50T4K
60 VDC @ 85°C										**40 VDC @ 125°C**			
27	20	0057	0145	0233	0321	5.02	3	12	700	10.2	144	T1	AR27 — 60T1M
27	10	0058	0146	0234	0322	5.02	3	12	700	10.2	144	T1	AR27 — 60T1K
100	20	0059	0147	0235	0323	2.53	4	20	1100	19	54	T2	AR100 — 60T2M
100	10	0060	0148	0236	0324	2.53	4	20	1100	19	54	T2	AR100 — 60T2K
220	20	0061	0149	0237	0325	1.81	8	32	1400	30	29	T3	AR220 — 60T3M
220	10	0062	0150	0238	0326	1.81	8	32	1400	30	29	T3	AR220 — 60T3K
270	20	0063	0151	0239	0327	1.33	9	36	1850	27	23	T4	AR270 — 60T4M
270	10	0064	0152	0240	0328	1.33	9	36	1850	27	23	T4	AR270 — 60T4K

① Complete Tansitor Part Number by adding letter M, P, or R for Failure Rate Level and I for Insulation.
② For high vibration and shock requirements, add suffix "H".
③ ±5% Capacitance Tolerance, Letter J, is available in the Commercial Type AR unit.

EXTENDED RANGE

Cap @ 25°C & 120Hz µF	Cap Tol ±%	Military Type Designation ② MIL-C-39006/25 Failure Rate Level M	P	R	S	Max ESR @ 120Hz ohms	Max DCL µA 25°C	85°C & 125°C	AC Ripple 85°C 40Khz mA rms	Max DF @ 120Hz %	Max Imp @ -55°C & 120Hz ohms	Case Size	Tansitor Part Number ①②③
75 VDC @ 85°C									**50 VDC @ 125°C**				
22	20	0065	0153	0241	0329	5.14	3	12	600	8.5	157	T1	AR22 — 75 T1 M
22	10	0066	0154	0242	0330	5.14	3	12	600	8.5	157	T1	AR22 — 75 T1 K
82	20	0067	0155	0243	0331	2.46	4	24	1000	15.2	63	T2	AR82 — 75 T2 M
82	10	0068	0156	0244	0332	2.46	4	24	1000	15.2	63	T2	AR82 — 75 T2 K
180	20	0069	0157	0245	0333	1.80	9	36	1300	24.4	30	T3	AR180 — 75 T3 M
180	10	0070	0158	0246	0334	1.80	9	36	1300	24.4	30	T3	AR180 — 75 T3 K
220	20	0071	0159	0247	0335	2.24	10	40	1800	37.0	24	T4	AR220 — 75 T4 M
220	10	0072	0160	0248	0336	2.24	10	40	1800	37.0	24	T4	AR220 — 75 T4 K
100 VDC @ 85°C									**65 VDC @ 125°C**				
10	20	0073	0161	0249	0337	5.99	3	12	800	4.5	200	T1	AR10 — 100 T1 M
10	10	0074	0162	0250	0338	5.99	3	12	800	4.5	200	T1	AR10 — 100 T1 K
39	20	0075	0163	0251	0339	3.55	5	24	1300	10.4	80	T2	AR39 — 100 T2 M
39	10	0076	0164	0252	0340	3.55	5	24	1300	10.4	80	T2	AR39 — 100 T2 K
68	20	0077	0165	0253	0341	2.21	10	40	1600	11.3	40	T3	AR68 — 100 T3 M
68	10	0078	0166	0254	0342	2.21	10	40	1600	11.3	40	T3	AR68 — 100 T3 K
120	20	0079	0167	0255	0343	2.77	12	48	2000	25	30	T4	AR120 — 100 T4 M
120	10	0080	0168	0256	0344	2.77	12	48	2000	25	30	T4	AR120 — 100 T4 K
125 VDC @ 85°C									**85 VDC @ 125°C**				
6.8	20	0081	0169	0257	0345	11.7	3	12	700	6.0	300	T1	AR 6.8 — 125 T1 M
6.8	10	0082	0170	0258	0346	11.7	3	12	700	6.0	300	T1	AR 6.8 — 125 T1 K
27	20	0083	0171	0259	0347	3.55	5	24	1200	7.2	90	T2	AR27 — 125 T2 M
27	10	0084	0172	0260	0348	3.55	5	24	1200	7.2	90	T2	AR27 — 125 T2 K
47	20	0085	0173	0261	0349	2.24	10	40	1500	7.9	50	T3	AR47 — 125 T3 M
47	10	0086	0174	0262	0350	2.24	10	40	1500	7.9	50	T3	AR47 — 125 T3 K
82	20	0087	0175	0263	0351	2.82	12	48	1900	17.4	32	T4	AR82 — 125 T4 M
82	10	0088	0176	0264	0352	2.82	12	48	1900	17.4	32	T4	AR82 — 125 T4 K

① Complete Tansitor Part Number by adding letter M, P, or R for Failure Rate Level and I for Insulation.
② For high vibration and shock requirements, add suffix "H".
③ ±5% Capacitor Tolerance, letter J, is available in the commercial type AR unit.

RIPPLE CURRENT MULTIPLIERS VS FREQUENCY, TEMPERATURE AND APPLIED PEAK VOLTAGE.

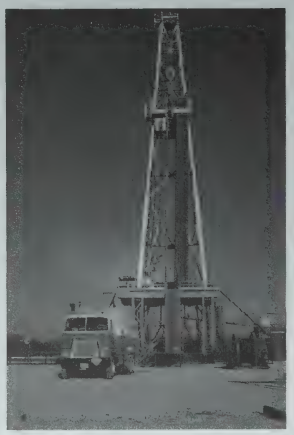
Frequency of applied ripple current		120 Hz				800 Hz				1 Khz				10 Khz				40 Khz				100 Khz			
Ambient still air temperature in °C		≤55	85	105	125	≤55	85	105	125	≤55	85	105	125	≤55	85	105	125	≤55	85	105	125	≤55	85	105	125
% of 85°C rated peak voltage	100%	.60	.39	-	-	.71	.43	-	-	.72	.45	-	-	.88	.55	-	-	1.0	.63	-	-	1.1	.69	-	-
	90%	.60	.46	-	-	.71	.55	-	-	.72	.55	-	-	.88	.67	-	-	1.0	.77	-	-	1.1	.85	-	-
	80%	.60	.52	.35	-	.71	.62	.42	-	.72	.62	.42	-	.88	.76	.52	-	1.0	.87	.59	-	1.1	.96	.65	-
	70%	.60	.58	.44	-	.71	.69	.52	-	.72	.70	.52	-	.88	.85	.64	-	1.0	.97	.73	-	1.1	1.07	.80	-
	66 2/3%	.60	.60	.46	.27	.71	.71	.55	.32	.72	.72	.55	.32	.88	.88	.68	.40	1.0	1.0	.77	.45	1.1	1.1	.85	.50

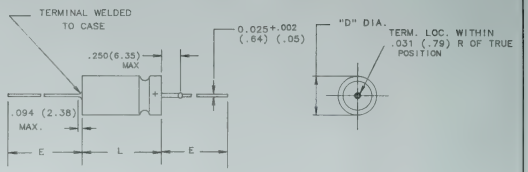
Notes:
1. At 125°C, the rated voltage of the capacitors decreases to 66 2/3% of the 85°C rated voltage.
2. The peak of the applied AC ripple voltage plus the applied DC voltage must not exceed the forward or reverse DC voltage rating of the capacitors.

PART NUMBER CODE

AR	270	25	T	2	K	P	H	I
Tansitor Capacitor Type	Capacitance in µF	85°C rated DC voltage	Seal Type Tantalum to Glass Hermetic	Case Size See Outline Dimensions	Cap. Tol. M ±20% K ±10% J ±5%	Failure Rate M, P, R, S	High Shock and Vibration Option	Insulation

200°C TANTALUM CAPACITORS FOR THE "MWD" INDUSTRY AND HIGH TEMPERATURE APPLICATIONS





PRODUCT FEATURES

- 200°C continuous operation
- 1000 hours life at 200°C
- 100% conditioning at 200°C
- Capacitance range 1.7 to 2200 µF
- 85°C voltage range 6 to 125 VDC, 200°C voltage range 2.4 to 50 VDC
- Operating range -55°C to 200°C
- Hermetically sealed
- Polar
- Low ESR
- Low DCL

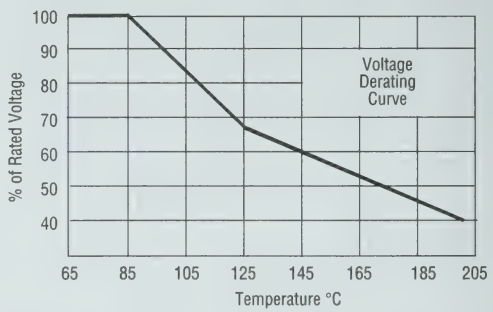
Tansitor type HAQ/HAR style capacitors are produced by further processing Tansitor types AQ/AR capacitors for operation to 200°C. Tansitor all-tantalum type HAQ/HAR high temperature capacitors have porous tantalum anodes and cathodes. The case is hermetically sealed with a welded tantalum-glass-tantalum seal and insulated with a KAPTON sleeve. Type HAQ/HAR capacitors may be used in reverse voltage applications up to 3 VDC to 85°C, 2 VDC to 125°C or 1.2 VDC to 200°C.

Dimensions—Millimeters

Case Size	D Max Insulated	D±.41 Uninsulated	L + .79 -.41	E±6.35
1	5.56	4.78	11.51	38.10
2	7.92	7.14	16.28	57.15
3	10.31	9.52	19.46	57.15
4	10.31	9.52	26.97	57.15

Dimensions—Inches

Case Size	D Max Insulated	D±.016 Uninsulated	L + .031 -.016	E±.250
1	.219	.188	.453	1.500
2	.312	.281	.641	2.250
3	.406	.375	.766	2.250
4	.406	.375	1.062	2.250



PART NUMBER CODE					
HAQ, HAR	**560**	**6**	**T2**	**K**	**I**
HAQ, HAR 200°C Capacitor Series	Nominal Capacitance (µF)	85°C Working Voltage	Case Size: T1, T2, T3, T4	Cap. Tolerance: K=10% M=20%	Kapton Insulation

Type HAQ

Nominal Ratings			200°C Parameters			
25°C Cap µF	85°C VDC	Case Size	VDC (Max)	Δ Cap *	DF (%) (Max)	DCL (µA) (Max)
30	6	T1	2.4	+25	25	2.5
68	6	T1	2.4	+45	25	3.5
140	6	T2	2.4	+25	28	10
270	6	T2	2.4	+50	38	14
330	6	T3	2.4	+30	30	12
560	6	T3	2.4	+45	40	18
1200	6	T4	2.4	+60	90	25
25	8	T1	3.2	+25	23	2.5
56	8	T1	3.2	+45	23	3.5
120	8	T2	3.2	+25	28	10
220	8	T2	3.2	+50	38	14
290	8	T3	3.2	+30	30	12
430	8	T3	3.2	+45	40	18
850	8	T4	3.2	+55	80	25
20	10	T1	4	+20	21	2.5
47	10	T1	4	+40	21	3.5
100	10	T2	4	+20	22	10
180	10	T2	4	+40	33	14
250	10	T3	4	+30	26	12
390	10	T3	4	+40	35	18
750	10	T4	4	+50	70	25
15	15	T1	6	+20	19	2.5
33	15	T1	6	+40	19	3.5
70	15	T2	6	+20	22	10
120	15	T2	6	+40	33	14
170	15	T3	6	+25	26	12
270	15	T3	6	+35	35	18
540	15	T4	6	+45	70	25
10	25	T1	10	+15	17	2.5
22	25	T1	10	+40	17	3.5
50	25	T2	10	+20	20	10
100	25	T2	10	+30	30	14
120	25	T3	10	+25	22	12
180	25	T3	10	+35	30	18
350	25	T4	10	+40	60	25
8	30	T1	12	+15	10	2.5
15	30	T1	12	+35	15	3.5
40	30	T2	12	+20	20	10
68	30	T2	12	+30	30	14
100	30	T3	12	+25	22	12
150	30	T3	12	+40	30	18
300	30	T4	12	+40	60	25
5	50	T1	20	+15	8	2.5
10	50	T1	20	+30	12	3.5
25	50	T2	20	+15	17	10
47	50	T2	20	+25	25	14
60	50	T3	20	+25	20	12
82	50	T3	20	+35	25	18
160	50	T4	20	+35	55	25
4	60	T1	24	+15	7	2.5
8.2	60	T1	24	+30	9	3.5
20	60	T2	24	+15	15	10
39	60	T2	24	+25	20	14
50	60	T3	24	+25	18	12
68	60	T3	24	+20	22	18
140	60	T4	24	+30	50	25
3.5	75	T1	30	+15	6	2.5
6.8	75	T1	30	+25	8	3.5
15	75	T2	30	+15	13	10
33	75	T2	30	+25	18	14
40	75	T3	30	+20	16	12
56	75	T3	30	+25	20	18
110	75	T4	30	+30	45	25
2.5	100	T1	40	+15	6	2.5
4.7	100	T1	40	+30	9	3.5
11	100	T2	40	+15	8	10
22	100	T2	40	+30	13	14
30	100	T3	40	+20	15	12
43	100	T3	40	+35	25	18
86	100	T4	40	+40	40	25
1.7	125	T1	50	+20	6	2.5
3.6	125	T1	50	+35	9	3.5
9	125	T2	50	+20	8	10
14	125	T2	50	+40	13	14
18	125	T3	50	+30	15	12
25	125	T3	50	+45	25	18
56	125	T4	50	+50	40	25

Type HAR

Nominal Ratings			200°C Parameters			
25°C Cap µF	85°C VDC	Case Size	VDC (Max)	Δ Cap *	DF (%) (Max)	DCL (µA) (Max)
220	6	T1	2.4	+100	200	3
820	6	T2	2.4	+100	620	12
1500	6	T3	2.4	+100	688	15
2200	6	T4	2.4	+100	680	30
180	8	T1	3.2	+100	164	3
680	8	T2	3.2	+100	520	12
1500	8	T3	3.2	+100	680	15
1800	8	T4	3.2	+100	552	30
150	10	T1	4	+80	136	3
560	10	T2	4	+80	424	15
1200	10	T3	4	+80	548	20
1500	10	T4	4	+80	456	35
100	15	T1	6	+50	90	5
390	15	T2	6	+50	222	20
820	15	T3	6	+50	333	30
1000	15	T4	6	+50	276	40
68	25	T1	10	+40	66	5
270	25	T2	10	+40	165	25
560	25	T3	10	+40	228	35
680	25	T4	10	+40	189	50
56	30	T1	12	+40	66	5
220	30	T2	12	+40	126	25
470	30	T3	12	+40	192	35
560	30	T4	12	+40	165	50
33	50	T1	20	+40	36	3
120	50	T2	20	+40	67	18
270	50	T3	20	+40	111	25
330	50	T4	20	+40	114	35
27	60	T1	24	+35	30	4
100	60	T2	24	+35	57	20
220	60	T3	24	+35	90	30
270	60	T4	24	+35	81	40
22	75	T1	30	+30	25	5
82	75	T2	30	+30	45	25
180	75	T3	30	+30	75	35
220	75	T4	30	+30	111	50
10	100	T1	40	+25	9	3
39	100	T2	40	+25	21	5
68	100	T3	40	+25	23	10
120	100	T4	40	+25	50	15
6.8	125	T1	50	+25	12	4
27	125	T2	50	+25	14	8
47	125	T3	50	+25	15	12
82	125	T4	50	+25	51	20

* Maximum % change from capacitance recorded at 25°C and 120Hz.

SUPERTAN®

ENHANCED ALL-TANTALUM PERFORMANCE

PRODUCT FEATURES

- High capacitance range 10 to 1800μF
- Low ESR: Less than 30% of conventional wet slug designs
- Very high ripple current, up to 3500 ma at 40Khz
- Voltage range 25 to 125VDC
- Operating range: -55°C to 85°C and with voltage derating to125°C
- Long operating and/or shelf life
- Tantalum case with a glass to tantalum hermetic seal

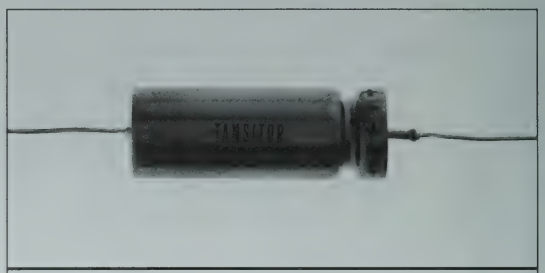
SuperTan® represents a major breakthrough in tantalum electrolytic capacitor design. This product possesses the inherent reliability of previous wet slug all tantalum designs, approaches the capacitance stability of a solid tantalum and at the same time requires no circuit impedance restriction. **SuperTan®** offers the highest volumetric efficiency of any wet slug design.

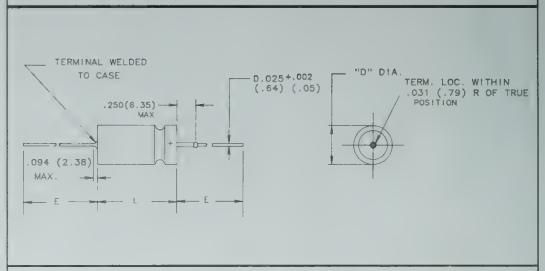
Tansitor's **SuperTan®** capacitors are porous anode types which are housed in a tantalum case and hermetically sealed. **SuperTan®** capacitors offer double the capacitance, lower ESR and higher AC ripple handling capability than any other wet slug capacitor.

APPLICATIONS

SuperTan® capacitors are well suited for use in circuits that demand quality and reliability in filtering, bypass, coupling and energy storage. They are designed for long life over the temperature range of -55°C to 125°C. Due to their superior ripple capabilities, **SuperTan®** capacitors are exceptionally well suited for filtering in switch mode power supplies.

SuperTan® will meet the stringent requirements of the avionics and aerospace industries for reliable service in a variety of applications.





Dimensions—Millimeters

Case Size	D Max Insulated	D±.41 Uninsulated	L + .79 -.41	E±6.35
1	5.56	4.78	11.51	38.10
2	7.92	7.14	16.28	57.15
3	10.31	9.52	19.46	57.15
4	10.31	9.52	26.97	57.15

Dimensions—Inches

Case Size	D Max Insulated	D±.016 Uninsulated	L + .031 -.016	E±.250
1	.219	.188	.453	1.500
2	.312	.281	.641	2.250
3	.406	.375	.766	2.250
4	.406	.375	1.062	2.250

NOTES:

1. The material at egress is tantalum.
2. Insulation sleeving will lap over the ends of the capacitor body.
3. Both leads are tinned nickel. (solderable and weldable)
4. Ripple current ratings by part number at 85°C and 40Khz are included in the rating table.
5. Ripple current correction factors for other temperatures and frequencies are listed.

Cap @ 25°C and 120Hz µF	Case Size	Max ESR ohms		Max DCL µA		Max DF @ 120Hz %	Max Imp @-55°C & 120Hz ohms	Maximum Capacitance Change %			AC Ripple 85°C 40Khz mA rms	Tansitor Part Number
		120Hz	40Khz	25°C	85°C & 125°C			-55°C	85°C	125°C		
25 VDC @ 85°C							**15 VDC @ 125°C**					
120	1	1.3	0.6	1	5	14	20	-30	+8	+12	1250	ST120 — 25T1MI
560	2	0.8	0.3	2	10	42	8	-49	+10	+15	2100	ST560 — 25T2MI
1200	3	0.6	0.2	3	20	70	7	-54	+12	+18	2600	ST1200 — 25T3MI
1800	4	0.5	0.2	4	25	81	3	-63	+12	+20	3100	ST1800 — 25T4MI
30 VDC @ 85°C							**20 VDC @ 125°C**					
100	1	1.3	0.6	1	5	11	25	-25	+8	+12	1200	ST100 — 30T1MI
470	2	0.8	0.3	2	10	36	13	-45	+10	+18	1800	ST470 — 30T2MI
1000	3	0.7	0.2	3	20	63	9	-50	+10	+18	2250	ST1000 — 30T3MI
1500	4	0.6	0.2	5	30	81	5	-60	+10	+20	3000	ST1500 — 30T4MI
50 VDC @ 85°C							**30 VDC @ 125°C**					
68	1	1.5	0.7	1	5	9	30	-18	+8	+15	1050	ST68 — 50T1MI
220	2	0.9	0.4	2	10	18	15	-38	+8	+15	1800	ST220 — 50T2MI
470	3	0.7	0.3	3	25	31	11	-50	+8	+15	2100	ST470 — 50T3MI
680	4	0.6	0.2	5	40	43	6	-60	+10	+20	2750	ST680 — 50T4MI
60 VDC @ 85°C							**40 VDC @ 125°C**					
47	1	2.0	1.0	1	5	9	40	-16	+8	+12	1050	ST47 — 60T1MI
150	2	1.0	0.5	2	10	15	18	-35	+8	+15	1650	ST150 — 60T2MI
390	3	0.9	0.4	3	25	31	13	-50	+8	+15	2100	ST390 — 60T3MI
560	4	0.8	0.3	5	40	40	8	-60	+8	+15	2750	ST560 — 60T4MI
75 VDC @ 85 °C							**50 VDC @ 125°C**					
33	1	2.5	1.4	1	5	8	50	-12	+5	+9	1050	ST33 — 75T1MI
110	2	1.3	0.6	2	10	12	30	-30	+6	+10	1650	ST110 — 75T2MI
330	3	1.0	0.4	3	30	29	18	-50	+6	+10	2100	ST330 — 75T3MI
470	4	0.9	0.3	5	50	38	10	-60	+6	+10	2750	ST470 — 75T4MI
100 VDC @ 85°C							**65 VDC @ 125°C**					
15	1	3.5	2.0	1	5	5	110	-9	+3	+10	1050	ST15 — 100T1MI
68	2	2.0	0.9	2	10	12	35	-22	+4	+12	1650	ST68 — 100T2MI
150	3	1.6	0.7	3	25	21	23	-38	+6	+10	2100	ST150 — 100T3MI
220	4	1.2	0.4	5	50	23	18	-50	+6	+10	2750	ST220 — 100T4MI
125 VDC @ 85°C							**85 VDC @ 125°C**					
10	1	5.5	3.0	1	5	5	160	-7	+3	+10	1050	ST10 — 125T1MI
47	2	2.3	1.0	2	10	10	50	-20	+5	+12	1650	ST47 — 125T2MI
100	3	1.8	0.8	3	25	16	50	-25	+5	+12	2100	ST100 — 125T3MI
150	4	1.6	0.6	5	50	21	18	-35	+6	+14	2750	ST150 — 125T4MI

Product Notes:

Reverse Voltage:

1. No continuous reverse voltage is permissible. Continuous reverse voltage will result in rapid loss of capacitance and increasing equivalent series resistance.
2. Transient reverse voltage surges are acceptable under the following conditions:
   A. The peak reverse voltage is equal to or less than 1.5 volts and the product of peak current times the duration of the reverse transient is 0.05 amp-seconds or less.
   B. The repetition rate of the reverse voltage surge is less than 10 Hz.

RIPPLE CURRENT MULTIPLIERS VS FREQUENCY, TEMPERATURE AND APPLIED PEAK VOLTAGE.

Frequency of applied ripple current		120 Hz				800 Hz				1 Khz				10 Khz				40 Khz				100 Khz			
Ambient still air temperature in °C		≤55	85	105	125	≤55	85	105	125	≤55	85	105	125	≤55	85	105	125	≤55	85	105	125	≤55	85	105	125
% of 85°C rated peak voltage	100%	.60	.39	-	-	.71	.43	-	-	.72	.45	-	-	.88	.55	-	-	1.0	.63	-	-	1.1	.69	-	-
	90%	.60	.46	-	-	.71	.55	-	-	.72	.55	-	-	.88	.67	-	-	1.0	.77	-	-	1.1	.85	-	-
	80%	.60	.52	.35	-	.71	.62	.42	-	.72	.62	.42	-	.88	.76	.52	-	1.0	.87	.59	-	1.1	.96	.65	-
	70%	.60	.58	.44	-	.71	.69	.52	-	.72	.70	.52	-	.88	.85	.64	-	1.0	.97	.73	-	1.1	1.07	.80	-
	66 2/3%	.60	.60	.46	.27	.71	.71	.55	.32	.72	.72	.55	.32	.88	.88	.68	.40	1.0	1.0	.77	.45	1.1	1.1	.85	.50

Notes:

1. At 125°C, the rated voltage of the capacitors decreases to 66 2/3 of the 85°C rated voltage.
2. The peak of the applied AC ripple voltage plus the applied DC voltage must not exceed the forward or reverse DC voltage rating of the capacitors.

SUPERTAN®

ENHANCED ALL-TANTALUM PERFORMANCE

PRODUCT FEATURES

- High capacitance range 10 to 4700 μF
- Low ESR: Less than 30% of conventional wet slug designs
- Very high ripple current, up to 3500 ma at 40 Khz at 85°C
- Voltage range 6 to 125 VDC
- Operating range: -55°C to 85°C
- Long operating and/or shelf life
- Tantalum case with a glass to tantalum hermetic seal

Tansitor's STA series represents a major breakthrough in tantalum wet slug capacitor technology. The STA product possesses the inherent reliability of previous wet slug all tantalum designs, approaches the capacitance stability of a solid tantalum and at the same time requires no circuit impedance restriction. The STA series offers the highest volumetric efficiency available to designers for operation to 85°C.

Tansitor's STA series capacitors are porous anode types, housed in a tantalum case and hermetically sealed. STA capacitors offer extremely high capacitance, low ESR and very high ripple current capability.

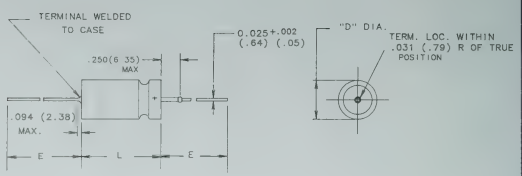
APPLICATIONS

STA series capacitors are well suited for use in circuits that demand quality and reliability. They are designed for long life over the temperature range of -55°C to 85°C and due to their superior ripple current capabilities, Tansitor's STA series capcaitors are exceptionally well suited for filtering and energy storage applications.

PRODUCT NOTES

Reverse Voltage:

1. No continuous reverse voltage is permissible. Continuous reverse voltage will result in rapid loss of capacitance and increasing equivalent series resistance.
2. Transient reverse voltage surges are acceptable under the following conditions:
   - A. The peak reverse voltage is equal to or less than 1.5 volts and the product of peak current times the duration of the reverse transient is 0.05 amp-seconds or less.
   - B. The repetition rate of the reverse voltage surge is less than 10 Hz.



Dimensions—Millimeters

Case Size	D Max Insulated	D±.41 Uninsulated	L + .79 - .41	E±6.35
1	5.56	4.78	11.51	38.10
2	7.92	7.14	16.28	57.15
3	10.31	9.52	19.46	57.15
4	10.31	9.52	26.97	57.15

Dimensions—Inches

Case Size	D Max Insulated	D±.016 Uninsulated	L + .031 - .016	E±.250
1	.219	.188	.453	1.500
2	.312	.281	.641	2.250
3	.406	.375	.766	2.250
4	.406	.375	1.062	2.250

NOTES:

1. The material at egress is tantalum.
2. Insulation sleeving will lap over the ends of the capacitor body.
3. Both leads are tinned nickel. (solderable and weldable).
4. Ripple current ratings by part number at 85°C and 40 Khz are included in the rating table.
5. Ripple current correction factors for other temperatures and frequencies are listed.

WET TANTALUM: All Tantalum

DUAL SEAL CONSTRUCTION

Type STA SuperTan®

Cap @ 25°C & 120Hz µF	Case Size	Max ESR ohms		Max DCL µA		Max DF at 120Hz %	Max Imp @ -55°C & 120Hz ohms	Maximum Capacitance Change %		AC Ripple 85°C 40Khz mA rms	Tansitor Part Number
		120 Hz	40 Khz	25°	85°C			-55°C	85°C		
6 VDC @ 85°C											
470	1	0.9	0.4	1	3	46	12	-65	+8	1500	STA470 — 6T1MI
1500	2	0.7	0.3	3	8	101	9	-75	+10	2200	STA1500 — 6T2MI
3300	3	0.5	0.2	8	30	149	7	-85	+15	2800	STA3300 — 6T3MI
4700	4	0.3	0.2	10	35	148	5	-85	+18	3500	STA4700 — 6T4MI
10 VDC @ 85°C											
330	1	1.0	0.5	1	3	35	13	-55	+8	1400	STA330 — 10T1MI
1000	2	0.8	0.3	3	10	70	7	-70	+10	2200	STA1000 — 10T2MI
2200	3	0.5	0.2	5	30	109	6	-70	+15	2800	STA2200 — 10T3MI
3300	4	0.4	0.2	8	30	119	3	-78	+18	3500	STA3300 — 10T4MI
15 VDC @ 85°C											
150	1	1.1	0.5	1	3	16	19	-42	+8	1400	STA150 — 15T1MI
680	2	0.8	0.3	2	10	49	8	-61	+10	2200	STA680 — 15T2MI
1500	3	0.6	0.2	5	25	81	7	-63	+15	2700	STA1500 — 15T3MI
2700	4	0.4	0.2	4	25	109	3	-70	+15	3400	STA2700 — 15T4MI
25 VDC @ 85°C											
120	1	1.3	0.6	1	5	14	20	-30	+8	1250	STA120 — 25T1MI
560	2	0.8	0.3	2	10	42	8	-49	+10	2100	STA560 — 25T2MI
1200	3	0.6	0.2	3	20	70	7	-54	+12	2600	STA1200 — 25T3MI
1800	4	0.5	0.2	4	25	81	3	-63	+12	3100	STA1800 — 25T4MI
30 VDC @ 85°C											
100	1	1.3	0.6	1	5	11	25	-25	+8	1200	STA100 — 30T1MI
470	2	0.8	0.3	2	10	36	13	-45	+10	1800	STA470 — 30T2MI
1000	3	0.7	0.2	3	20	63	9	-50	+10	2250	STA1000 — 30T3MI
1500	4	0.6	0.2	5	30	81	5	-60	+10	3000	STA1500 — 30T4MI
50 VDC @ 85°C											
68	1	1.5	0.7	1	5	9	30	-18	+8	1050	STA68 — 50T1MI
220	2	0.9	0.4	2	10	18	15	-38	+8	1800	STA220 — 50T2MI
470	3	0.7	0.3	3	25	31	11	-50	+8	2100	STA470 — 50T3MI
680	4	0.6	0.2	5	40	43	6	-60	+10	2750	STA680 — 50T4MI
60 VDC @ 85°C											
47	1	2.0	1.1	1	5	9	40	-16	+8	1050	STA47 — 60T1MI
150	2	1.1	0.5	2	10	15	18	-35	+8	1650	STA150 — 60T2MI
390	3	0.9	0.4	3	25	31	13	-50	+8	2100	STA390 — 60T3MI
560	4	0.8	0.3	5	40	40	8	-60	+8	2750	STA560 — 60T4MI
75VDC @ 85°C											
33	1	2.5	1.4	1	5	8	50	-12	+5	1050	STA33 — 75T1MI
110	2	1.3	0.6	2	10	12	30	-30	+6	1650	STA110 — 75T2MI
330	3	1.0	0.4	3	30	29	18	-50	+6	2100	STA330 — 75T3MI
470	4	0.9	0.3	5	50	38	10	-60	+6	2750	STA470 — 75T4MI
100 VDC @ 85°C											
15	1	3.5	2.0	1	5	5	110	-9	+3	1050	STA15 — 100T1MI
68	2	2.1	0.9	2	10	12	35	-22	+4	1650	STA68 — 100T2MI
150	3	1.6	0.7	3	25	21	23	-38	+6	2100	STA150 — 100T3MI
220	4	1.2	0.4	5	50	23	18	-50	+6	2750	STA220 — 100T4MI
125 VDC @ 85°C											
10	1	5.5	3.0	1	5	5	160	-7	+3	1050	STA10 — 125T1MI
47	2	2.3	1.0	2	10	10	50	-20	+5	1650	STA47 — 125T2MI
100	3	1.8	0.8	3	25	16	50	-25	+5	2100	STA100 — 125T3MI
150	4	1.6	0.6	5	50	21	18	-35	+6	2750	STA150 — 125T4MI

RIPPLE CURRENT MULTIPLIERS VS FREQUENCY, TEMPERATURE AND APPLIED PEAK VOLTAGE.

Frequency of applied ripple current		120 Hz		800 Hz		1 Khz		10 Khz		40 Khz		100 Khz	
Ambient still air temperature in °C		≤55	85	≤55	85	≤55	85	≤55	85	≤55	85	≤55	85
% of 85°C rated peak voltage	100%	.60	.39	.71	.43	.72	.45	.88	.55	1.0	.63	1.1	.69
	90%	.60	.46	.71	.55	.72	.55	.88	.67	1.0	.77	1.1	.85
	80%	.60	.52	.71	.62	.72	.62	.88	.76	1.0	.87	1.1	.96
	70%	.60	.58	.71	.69	.72	.70	.88	.85	1.0	.97	1.1	1.07
	66 2/3%	.60	.60	.71	.71	.72	.72	.88	.88	1.0	1.0	1.1	1.1

Notes:

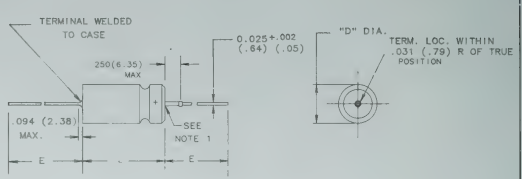
1. The peak of the applied AC ripple voltage plus the applied DC voltage must not exceed the forward or reverse DC voltage rating of the capacitors.

WET TANTALUM: Silver Case

PRODUCT FEATURES

- Polar
- Elastomer or Glass Seal
- Low DC Leakage
- Operating Range -55°C to +85°C and with voltage derating to +125°C
- Voltage Range 6 to 125VDC
- Capacitance Range 1.7 to 1200μF

Tansitor's Type W capacitors are porous anode types which use high purity tantalum powder pressed and sintered into an anode slug to achieve the high capacitance values. A silver case serves as the container and cathode connection. The dielectric material is tantalum pentoxide and the electrolyte is concentrated sulfuric acid. Tansitor's Type W is designed and manufactured to meet the requirements of MIL-C-3965 and MIL-C-39006.



Dimensions—Millimeters

Case Size	D Max Insulated	D±.41 Uninsulated	L + .79 - .41	E±6.35
1	5.56	4.78	11.51	38.10
2	7.92	7.14	16.28	57.15
3	10.31	9.53	19.46	57.15
4	10.31	9.53	26.97	57.15

Dimensions—Inches

Case Size	D Max Insulated	D±.016 Uninsulated	L + .031 - .016	E±.250
1	.219	.188	.453	1.500
2	.312	.281	.641	2.250
3	.406	.375	.766	2.250
4	.406	.375	1.062	2.250

APPLICATIONS

The low DC leakage of these porous anode tantalum capacitors makes them particularly well suited for low voltage solid state circuit and timing applications. The high capacitance per unit volume makes them an excellent choice for filtering and storage applications.

AC Ripple:
These capacitors are suitable for AC ripple applications only when all of the following conditions are met:

— Sufficient DC bias is applied to prevent a reversal of polarity on the capacitor.
— The sum of the DC bias and the AC peak voltage should not exceed the DC voltage rating of the capacitor.
— The ripple current should be limited to the equivalent heating effect of sinusoidal ripple currents which are listed as maximum allowable by case size in the table below:

Case Size	Maximum Allowable AC RMS Ripple
1	50mA @ 85°C 40mA @ 125°C
2	250mA @ 85°C 200mA @ 125°C
3	500mA @ 85°C 400mA @ 125°C
4	600mA @ 85°C 480mA @ 125°C

EQUIVALENT MILITARY SPECIFICATIONS

Type W — C is equivalent to style CL64/65 to Mil-C-3965
Type W — H is equivalent to style CL66/67 to Mil-C-3965
Type W — T is equivalent to style CLR 65 to Mil-C-39006

Notes:
1. Material at egress is tantalum wire for C seal type, metal feed thru for H seal type and tantalum feed thru for T seal type.
2. Heat shrinkable insulation will lap over the ends of the capacitor body.

Seals:
There are three seal types available on the Type W. The desired seal may be ordered by inserting the appropriate letter designation in the part number code.

PART NUMBER CODE							
W	30	6	C	1	M	P*	I
Capacitor Type	Capacitance in μF	85°C Rated DC Voltage	Seal Type C-Elastomer, H-Hermetic Glass to Metal, T-Tantalum to Glass Hermetic	Case Size (See Outline Dimension)	Cap. Tolerance M ±20% K ±10% J ± 5%	L,M,P or R failure rate level for CLR-65 only. *No entry made for CL64, 65, 66 or 67 parts.	I-Insulated (CL 65/67) X-Uninsulated (CL 64/66)

Scope: This product specification covers wet slug or wet anode tantalum capacitors that employ a sintered tantalum anode, silver case and sulfuric acid electrolyte.
Applicable Documents:
MIL-C-3965
MIL-C-39006
MIL-STD-202
Tansitor Data

GENERAL
Tantalum porous anode (wet slug) capacitors are inherently very reliable devices. However, they are more sensitive to misapplication than the other tantalum capacitor types. Therefore, care is required to assure that these polar capacitors should not be used in applications which involve either steady state or transient negative voltages and AC ripple currents in excess of those recommended.

MECHANICAL DATA
Construction: Types CL64/65, CL66/67, CLR65, W and UW capacitors employ a sintered tantalum anode, with a silver case/cathode connection and use sulfuric acid electrolyte. A choice of elastomer or hermetic end seals is available. Type CL55 and RW capacitors are hermetically sealed assemblies of Type W capacitors.
Insulation: An insulating sleeve is normally applied to CL65, CL67, CLR65, W and UW type capacitors. Unsleeved capacitors may be ordered as CL64, CL66 or by replacing the suffix I with X in the Tansitor part number.
No insulation is provided for the outer case of CL55 and RW type. However, both anode and cathode terminals are insulated from the case.
Leads: The anode (plus) lead is solder coated pure nickel, the cathode (negative) lead is solder coated copper on CL64/65, CL66/67, CLR65, W and UW types.
Solder coated eyelet terminals are provided for ease in making electrical connections on CL55 and RW type.

Marking: Standard marking includes the Tansitor Part Number or Mil Part Number, a polarity symbol, date code and source code. Where space permits, the capacitance in microfarads, the 85°C rated voltage and tolerance designation are also included. Special marking is available upon request.

Requirements: The product requirements and characteristics are as specified here in conjunction with the individual product data sheets for the product type. In the case of conflict between this product specification and the product data sheet, the product data sheet will govern.

1. **DC Leakage:** Shall be measured with the DC rated voltage applied. The electrification period shall be up to 5 minutes and the measured value shall not exceed the applicable limits as stated in the product sheet.

2. **Capacitance:** Shall be measured at 120 ± 5Hz with an applied AC voltage of equal to or less than 1.0 VRMS and a DC bias of 2.2 + 0, - 1.0 volts. The AC voltage must not be applied prior to the application of the bias voltage. The capacitance value shall be within the stated tolerance or the limits given in the product data sheet.

3. **Dissipation Factor:** Shall be measured under the same conditions that apply to capacitance measurements (See Para 2) and shall be within the limits specified in the praduct data sheet.

4. **Seal:** Three seal types are used on products covered by this specification. The designation for seal type on other than MIL part numbers is contained in Tansitor's part number:
   C—Elastomer Seal
   H—Hermetic Glass to Metal Seal
   T—Tantalum to Glass Hermetic Seal
   Hermetic Seal — When tested in accordance with MIL-STD-202, Method 112, test condition C, the leak rate shall be no greater than 1×10^{-8}atm cc/sec. When tested in accordance with MIL-STD-202, Method 112, test condition A, there shall be no continuous stream of bubbles.

5. **Shock:** (Specified Pulse): When capacitors are tested in accordance with Method 213 of MIL-STD-202, test condition 1 (100G), there shall be no intermittent contacts of 0.5 milliseconds or greater duration, no arcing or any other indication of breakdown, shorts or open circuits and there shall be no evidence of mechanical damage or electrolyte leakage. Capacitors with axial lead wire terminals shall be rigidly mounted on a fixture by the body with their terminals secured to rigidly supported stud terminals approximately 0.375 inches, (9.53 mm) away from the end of the capacitor body.

6. **Vibration:** Capacitors are tested in accordance with Method 204 of MIL-STD-202, test condition D, except the motion shall be applied for 8 hours (4 hours in each of two mutually perpendicular directions, one parallel to and the other perpendicular to the cylindrical axis). Observation to determine intermittent contacts, open or short circuits shall be made during the last 30 minutes of vibration in each direction, and there shall be no intermittent contacts or open or short circuits of 0.5 milliseconds or greater duration, and no evidence of mechanical damage or leakage of electrolyte.

7. **Thermal Shock:** When capacitors are tested as described below, there shall be no evidence of leakage of electrolyte, the DC leakage shall not exceed 125% of the value specified in the product data sheet, capacitance shall be within ±5% of the pre-test measurement and dissipation factor shall not exceed 115% of the value specified in the product data sheet.
   Test Condition — MIL-STD-202, Method 107, test condition letter A. Step 3 shall be at 125° + 4°,-0°C and number of cycles shall be 30.

8. **Salt Spray** (Corrosion): When capacitors are tested in accordance with Method 101 of MIL STD 202, test condition B, there shall be no evidence of harmful corrosion and at least 90% of any exposed metallic surface shall be unaffected. The marking shall remain legible.

9. **Solderability:** When capacitors are tested in accordance with Method 208 of MIL-STD-202 with immersion in

flux and solder up to 0.062 inches (1.57 mm) of the weld joint or 0.156 inches (3.96 mm) of the body, the dipped surface of the leads shall be at least 95% covered with a new, smooth solder coating and the remaining 5% shall contain only small pinholes or rough spots; these shall not be concentrated in one area.

10. **Terminal Strength:** Leads will withstand a pull of 3 pounds for axial lead capacitors or 5 pounds for solder lug terminals for 30 seconds when applied axially. Leads will withstand successive bends in alternate directions until 4 bends are completed. Following terminal strength tests, there shall be no loosening or permanent damage to the terminal, terminal weld or seal .

11. **Surge Voltage:** The surge voltage is equal to 115% of the DC working voltage. The capacitors will exhibit no mechanical damage or leakage of electrolyte when subjected to 1000 cycles of the applicable surge voltage at 85°C. Each cycle shall consist of a 30 second application of surge voltage through a 1000 ohm resistor followed by a 5½ minute discharge period through the same resistor.

12. **Moisture Resistance:** Capacitors shall be tested in accordance with Method 106 of MIL-STD-202, except vibration shall not be required during step 7b. Capacitors shall exhibit no evidence of corrosion, mechanical damage or leakage of electrolyte. D.C. leakage shall not exceed 125% of initial requirement, capacitance shall not have changed more than ±8% from the initial measurement and dissipation factor shall not exceed 115% of the initial requirement.

13. **Dielectric Withstanding Voltage** (Insulated capacitors only): When capacitors are tested in accordance with Method 301 of MIL-STD-202 and at a test voltage of 2000 VDC there shall be no evidence of break down of the insulation sleeving.

14. **Insulation Resistance:** (Insulated capacitors only): When capacitors are tested in accordance with Method 302 of MIL-STD-202, test condition B (500 VDC) for 1 minute, the insulation resistance shall not be less than 100 megohms .

15. **Low Temperature Storage:** Capacitors shall be tested in accordance with Method 502 of MIL-STD-810 except exposure time shall be 72 hours, followed by 1 hour at 125°C within 24 hours after low temperature storage and steps 3, 4 and 5 are not required. D.C. leakage shall not exceed the value specified in the product data sheet, capacitance shall not change more than ±5% from the initial measurement, dissipation factor shall not exceed the initial requirement and there shall be no evidence of electrolyte leakage.

16. **Stability at Low and High Temperature:** When capacitors are tested in the sequence shown and thermal stability is reached at each temperature step, the measured values shall not exceed the limits specified in the product data sheet. Capacitance measurements at steps 3 and 6 shall be within 5% of the step 1 capacitance measurements.

Step	Temperature	Measurement
1	+25°C	DC leakage, capacitance, dissipation factor
2	-55°C	impedance, capacitance
3	+25°C	DC leakage, capacitance, dissipation factor
4	+85°C	DC leakage, capacitance, dissipation factor
5	+125°C	DC leakage, capacitance, dissipation factor
6	+25°C	DC leakage, capacitance, dissipation factor

17. **Impedance:** Shall be measured directly or determined from measurements made on a bridge. Measurements shall be made at 120 Hz and measurement accuracy shall be ±5%.

18. **Reverse Voltage:** The product covered by this specification will not tolerate any reverse voltage. Extreme care should be exercised in the testing and use of silver cased wet slug capacitors to avoid any negative voltages.

19. **Life:** When tested for 240 or 2000 hours at DC working voltage and 85°C (or derated voltage and 125°C if applicable) there shall be no evidence of mechanical damage or leakage of electrolyte. DC leakage shall not exceed the initial requirement, capacitance shall not change more than ±10% from the initial measurement and dissipation factor shall not exceed the initial requirement.
    When tested for 10,000 hours at DC working voltage and 85°C (or derated voltage and 125°C if applicable) there shall be no evidence of mechanical damage or leakage of electrolyte. At 85°C the DC leakage shall not exceed 125% of initial requirements. At 25°C the DC leakage shall not exceed the initial requirement. Capacitance change shall not exceed +10%/-20% of the initial requirement. The dissipation factor shall not exceed 200% of initial requirement.

20. **Fungus:** All external materials are fungus resistant.

21. **Resistance to Solvents:** When capacitors are tested in accordance with Method 215 of MIL-STD-202, the marking shall remain legible.

22. **Resistance to Soldering Heat:** When capacitors are tested in accordance with Method 210 of MIL-STD-202, test condition B to within 0.250 inches, (6.35 mm) of seal or case, the DC leakage and dissipation factor shall not exceed the value specified in the product data sheet and the capacitance shall be within 5% of the pretest measurement.

WET TANTALUM: Glass to Tantalum Seal

Type W-T
CLR 65

Cap @ 25°C & 120Hz µF	Cap Tol ±%	Military Type Designation MIL-C-39006/09 Failure Rate Level L	M	P	R	Max ESR at 120Hz ohms	Max DCL µA 25°C	85°C & 125°C	Max DF @ 120Hz %	Case Size	Tansitor Part Number ①
6 VDC @ 85°C							**4 VDC @ 125°C**				
30	20	8001	8206	8411	8616	4.0	1	2.0	9.1	1	W30 — 6T1M
30	10	8002	8207	8412	8617	4.0	1	2.0	9.1	1	W30 — 6T1K
30	5	8003	8208	8413	8618	4.0	1	2.0	9.1	1	W30 — 6T1J
68	20	8004	8209	8414	8619	4.0	1	2.0	20.4	1	W68 — 6T1M
68	10	8005	8210	8415	8620	4.0	1	2.0	20.4	1	W68 — 6T1K
68	5	8006	8211	8416	8621	4.0	1	2.0	20.4	1	W68 — 6T1J
140	20	8007	8212	8417	8622	2.0	1	3.0	21.3	2	W140 — 6T2M
140	10	8008	8213	8418	8623	2.0	1	3.0	21.3	2	W140 — 6T2K
140	5	8009	8214	8419	8624	2.0	1	3.0	21.3	2	W140 — 6T2J
270	20	8010	8215	8420	8625	4.0	1	6.5	81.8	2	W270 — 6T2M
270	10	8011	8216	8421	8626	4.0	1	6.5	81.8	2	W270 — 6T2K
270	5	8012	8217	8422	8627	4.0	1	6.5	81.8	2	W270 — 6T2J
330	20	8013	8218	8423	8628	2.0	2	7.9	49.6	3	W330 — 6T3M
330	10	8014	8219	8424	8629	2.0	2	7.9	49.6	3	W330 — 6T3K
330	5	8015	8220	8425	8630	2.0	2	7.9	49.6	3	W330 — 6T3J
560	20	8016	8221	8426	8631	3.0	2	13.0	128.0	3	W560 — 6T3M
560	10	8017	8222	8427	8632	3.0	2	13.0	128.0	3	W560 — 6T3K
560	5	8018	8223	8428	8633	3.0	2	13.0	128.0	3	W560 — 6T3J
1200	20	8019	8224	8429	8634	1.6	3	14.0	144.4	4	W1200 — 6T4M
1200	10	8020	8225	8430	8635	1.6	3	14.0	144.4	4	W1200 — 6T4K
8 VDC @ 85°C							**5 VDC @ 125°C**				
25	20	8021	8226	8431	8636	4.0	1	2.0	7.6	1	W25 — 8T1M
25	10	8022	8227	8432	8637	4.0	1	2.0	7.6	1	W25 — 8T1K
25	5	8023	8228	8433	8638	4.0	1	2.0	7.6	1	W25 — 8T1J
56	20	8024	8229	8434	8639	4.0	1	2.0	17.0	1	W56 — 8T1M
56	10	8025	8230	8435	8640	4.0	1	2.0	17.0	1	W56 — 8T1K
56	5	8026	8231	8436	8641	4.0	1	2.0	17.0	1	W56 — 8T1J
220	20	8027	8232	8437	8642	4.0	1	7.0	66.4	2	W220 — 8T2M
220	10	8028	8233	8438	8643	4.0	1	7.0	66.4	2	W220 — 8T2K
220	5	8029	8234	8439	8644	4.0	1	7.0	66.4	2	W220 — 8T2J
430	20	8030	8235	8440	8645	3.0	2	14.0	91.5	3	W430 — 8T3M
430	10	8031	8236	8441	8646	3.0	2	14.0	91.5	3	W430 — 8T3K
430	5	8032	8237	8442	8647	3.0	2	14.0	91.5	3	W430 — 8T3J
850	20	8033	8238	8443	8648	1.0	4	16.0	65.8	4	W850 — 8T4M
850	10	8034	8239	8444	8649	1.0	4	16.0	65.8	4	W850 — 8T4K
10 VDC @ 85°C							**7 VDC @ 125°C**				
20	20	8035	8240	8445	8650	4.0	1	2.0	6.1	1	W20 — 10T1M
20	10	8036	8241	8446	8651	4.0	1	2.0	6.1	1	W20 — 10T1K
20	5	8037	8242	8447	8652	4.0	1	2.0	6.1	1	W20 — 10T1J
47	20	8038	8243	8448	8653	5.0	1	2.0	18.1	1	W47 — 10T1M
47	10	8039	8244	8449	8654	5.0	1	2.0	18.1	1	W47 — 10T1K
47	5	8040	8245	8450	8655	5.0	1	2.0	18.1	1	W47 — 10T1J
100	20	8041	8246	8451	8656	2.0	1	4.0	15.2	2	W100 — 10T2M
100	10	8042	8247	8452	8657	2.0	1	4.0	15.2	2	W100 — 10T2K
100	5	8043	8248	8453	8658	2.0	1	4.0	15.2	2	W100 — 10T2J
180	20	8044	8249	8454	8659	4.0	1	7.0	54.4	2	W180 — 10T2M
180	10	8045	8250	8455	8660	4.0	1	7.0	54.4	2	W180 — 10T2K
180	5	8046	8251	8456	8661	4.0	1	7.0	54.4	2	W180 — 10T2J
250	20	8047	8252	8457	8662	2.0	2	10.0	37.8	3	W250 — 10T3M
250	10	8048	8253	8458	8663	2.0	2	10.0	37.8	3	W250 — 10T3K
250	5	8049	8254	8459	8664	2.0	2	10.0	37.8	3	W250 — 10T3J
390	20	8050	8255	8460	8665	3.0	2	16.0	87.6	3	W390 — 10T3M
390	10	8051	8256	8461	8666	3.0	2	16.0	87.6	3	W390 — 10T3K
390	5	8052	8257	8462	8667	3.0	2	16.0	87.6	3	W390 — 10T3J
750	20	8053	8258	8463	8668	1.0	4	16.0	56.5	4	W750 — 10T4M
750	10	8054	8259	8464	8669	1.0	4	16.0	56.5	4	W750 — 10T4K
15 VDC @ 85°C							**10 VDC @ 125°C**				
15	20	8055	8260	8465	8670	5.0	1	2.0	5.7	1	W15 — 15T1M
15	10	8056	8261	8466	8671	5.0	1	2.0	5.7	1	W15 — 15T1K
15	5	8057	8262	8467	8672	5.0	1	2.0	5.7	1	W15 — 15T1J
33	20	8058	8263	8468	8673	5.0	1	2.0	12.5	1	W33 — 15T1M
33	10	8059	8264	8469	8674	5.0	1	2.0	12.5	1	W33 — 15T1K
33	5	8060	8265	8470	8675	5.0	1	2.0	12.5	1	W33 — 15T1J
70	20	8061	8266	8471	8676	2.5	1	4.0	13.1	2	W70 — 15T2M
70	10	8062	8267	8472	8677	2.5	1	4.0	13.1	2	W70 — 15T2K
70	5	8063	8268	8473	8678	2.5	1	4.0	13.1	2	W70 — 15T2J
120	20	8064	8269	8474	8679	4.0	1	7.0	36.8	2	W120 — 15T2M
120	10	8065	8270	8475	8680	4.0	1	7.0	36.8	2	W120 — 15T2K
120	5	8066	8271	8476	8681	4.0	1	7.0	36.8	2	W120 — 15T2J
170	20	8067	8272	8477	8682	2.0	2	10.0	25.4	3	W170 — 15T3M
170	10	8068	8273	8478	8683	2.0	2	10.0	25.4	3	W170 — 15T3K
170	5	8069	8274	8479	8684	2.0	2	10.0	25.4	3	W170 — 15T3J
270	20	8070	8275	8480	8685	3.0	2	16.0	60.9	3	W270 — 15T3M
270	10	8071	8276	8481	8686	3.0	2	16.0	60.9	3	W270 — 15T3K
270	5	8072	8277	8482	8687	3.0	2	16.0	60.9	3	W270 — 15T3J
540	20	8073	8278	8483	8688	1.0	6	24.0	49.0	4	W 540 — 15T4M
540	10	8074	8279	8484	8689	1.0	6	24.0	49.0	4	W 540 — 15T4K

① Complete Tansitor Part Number by adding letter L, M, P or R for Failure Rate Level.

WET TANTALUM: Glass to Tantalum Seal

Cap @ 25°C & 120Hz µF	Cap Tol ±%	Military Type Designation MIL-C-39006/09 Failure Rate Level L	M	P	R	Max ESR @ 120Hz ohms	Max DCL µA 25°C	85°C & 125°C	Max DF @ 120Hz %	Case Size	Tansitor Part Number ①
25 VDC @ 85°C								**15 VDC @ 125°C**			
10	20	8075	8280	8485	8690	6.0	1	2	4.6	1	W10 — 25T1M
10	10	8076	8281	8486	8691	6.0	1	2	4.6	1	W10 — 25T1K
10	5	8077	8282	8487	8692	6.0	1	2	4.6	1	W10 — 25T1J
22	20	8078	8283	8488	8693	5.0	1	2	8.3	1	W22 — 25T1M
22	10	8079	8284	8489	8694	5.0	1	2	8.3	1	W22 — 25T1K
22	5	8080	8285	8490	8695	5.0	1	2	8.3	1	W22 — 25T1J
100	20	8081	8286	8491	8696	4.0	1	10	31.4	2	W100 — 25T2M
100	10	8082	8287	8492	8697	4.0	1	10	31.4	2	W100 — 25T2K
100	5	8083	8288	8493	8698	4.0	1	10	31.4	2	W100 — 25T2J
180	20	8084	8289	8494	8699	4.0	2	18	54.3	3	W180 — 25T3M
180	10	8085	8290	8495	8700	4.0	2	18	54.3	3	W180 — 25T3K
180	5	8086	8291	8496	8701	4.0	2	18	54.3	3	W180 — 25T3J
350	20	8087	8292	8497	8702	1.3	7	28	35.0	4	W350 — 25T4M
350	10	8088	8293	8498	8703	1.3	7	28	35.0	4	W350 — 25T4K
30 VDC @ 85°C								**20 VDC @ 125°C**			
8	20	8089	8294	8499	8704	7.5	1	2	4.5	1	W8 — 30T1M
8	10	8090	8295	8500	8705	7.5	1	2	4.5	1	W8 — 30T1K
8	5	8091	8296	8501	8706	7.5	1	2	4.5	1	W8 — 30T1J
15	20	8092	8297	8502	8707	8.0	1	2	9.1	1	W15 — 30T1M
15	10	8093	8298	8503	8708	8.0	1	2	9.1	1	W15 — 30T1K
15	5	8094	8299	8504	8709	8.0	1	2	9.1	1	W15 — 30T1J
40	20	8095	8300	8505	8710	4.0	1	5	12.2	2	W40 — 30T2M
40	10	8096	8301	8506	8711	4.0	1	5	12.2	2	W40 — 30T2K
40	5	8097	8302	8507	8712	4.0	1	5	12.2	2	W40 — 30T2J
68	20	8098	8303	8508	8713	6.0	1	8	31.0	2	W68 — 30T2M
68	10	8099	8304	8509	8714	6.0	1	8	31.0	2	W68 — 30T2K
68	5	8100	8305	8510	8715	6.0	1	8	31.0	2	W68 — 30T2J
100	20	8101	8306	8511	8716	6.0	2	12	19.0	3	W100 — 30T3M
100	10	8102	8307	8512	8717	6.0	2	12	19.0	3	W100 — 30T3K
100	5	8103	8308	8513	8718	6.0	2	12	19.0	3	W100 — 30T3J
150	20	8104	8309	8514	8719	2.5	2	18	46.0	3	W150 — 30T3M
150	10	8105	8310	8515	8720	2.5	2	18	46.0	3	W150 — 30T3K
150	5	8106	8311	8516	8721	2.5	2	18	46.0	3	W150 — 30T3J
300	20	8107	8312	8517	8722	1.6	8	32	35.0	4	W300 — 30T4M
300	10	8108	8313	8518	8723	1.6	8	32	35.0	4	W300 — 30T4K
50 VDC @ 85°C								**30 VDC @ 125°C**			
5	20	8109	8314	8519	8724	9.0	1	2	3.4	1	W5 — 50T1M
5	10	8110	8315	8520	8725	9.0	1	2	3.4	1	W5 — 50T1K
5	5	8111	8316	8521	8726	9.0	1	2	3.4	1	W5 — 50T1J
10	20	8112	8317	8522	8727	8.0	1	2	6.0	1	W10 — 50T1M
10	10	8113	8318	8523	8728	8.0	1	2	6.0	1	W10 — 50T1K
10	5	8114	8319	8524	8729	8.0	1	2	6.0	1	W10 — 50T1J
25	20	8115	8320	8525	8730	6.0	1	5	11.2	2	W25 — 50T2M
25	10	8116	8321	8526	8731	6.0	1	5	11.2	2	W25 — 50T2K
25	5	8117	8322	8527	8732	6.0	1	5	11.2	2	W25 — 50T2J
47	20	8118	8323	8528	8733	6.0	1	9	21.4	2	W47 — 50T2M
47	10	8119	8324	8529	8734	6.0	1	9	21.4	2	W47 — 50T2K
47	5	8120	8325	8530	8735	6.0	1	9	21.4	2	W47 — 50T2J
60	20	8121	8326	8531	8736	3.0	2	12	13.6	3	W60 — 50T3M
60	10	8122	8327	8532	8737	3.0	2	12	13.6	3	W60 — 50T3K
60	5	8123	8328	8533	8738	3.0	2	12	13.6	3	W60 — 50T3J
82	20	8124	8329	8534	8739	4.0	2	16	24.9	3	W82 — 50T3M
82	10	8125	8330	8535	8740	4.0	2	16	24.9	3	W82 — 50T3K
82	5	8126	8331	8536	8741	4.0	2	16	24.9	3	W82 — 50T3J
160	20	8127	8332	8537	8742	2.2	8	32	25.7	4	W160 — 50T4M
160	10	8128	8333	8538	8743	2.2	8	32	25.7	4	W160 — 50T4K
60 VDC @ 85°C								**40 VDC @ 125°C**			
4	20	8129	8334	8539	8744	10.0	1	2	3 0	1	W4 — 60T1M
4	10	8130	8335	8540	8745	10.0	1	2	3.0	1	W4 — 60T1K
4	5	8131	8336	8541	8746	10.0	1	2	3.0	1	W4 — 60T1J
8.2	20	8132	8337	8542	8747	8.0	1	2	5 0	1	W8.2 — 60T1M
8.2	10	8133	8338	8543	8748	8.0	1	2	5.0	1	W8.2 — 60T1K
8.2	5	8134	8339	8544	8749	8.0	1	2	5.0	1	W8.2 — 60T1J
20	20	8135	8340	8545	8750	5.0	1	5	7.6	2	W20 — 60T2M
20	10	8136	8341	8546	8751	5.0	1	5	7.6	2	W20 — 60T2K
20	5	8137	8342	8547	8752	5.0	1	5	7.6	2	W20 — 60T2J
39	20	8138	8343	8548	8753	7.0	1	9	20.7	2	W39 — 60T2M
39	10	8139	8344	8549	8754	7.0	1	9	20.7	2	W39 — 60T2K
39	5	8140	8345	8550	8755	7.0	1	9	20.7	2	W39 — 60T2J
50	20	8141	8346	8551	8756	4.0	2	12	15.3	3	W50 — 60T3M
50	10	8142	8347	8552	8757	4.0	2	12	15.3	3	W50 — 60T3K
50	5	8143	8348	8553	8758	4.0	2	12	15.3	3	W50 — 60T3J
68	20	8144	8349	8554	8759	6.0	2	16	30.7	3	W68 — 60T3M
68	10	8145	8350	8555	8760	6.0	2	16	30.7	3	W68 — 60T3K
68	5	8146	8351	8556	8761	6.0	2	16	30.7	3	W68 — 60T3J
140	20	8147	8352	8557	8762	2.4	8	32	25.7	4	W140 — 60T4M
140	10	8148	8353	8558	8763	2.4	8	32	25.7	4	W140 — 60T4K

① Complete Tansitor Part Number by adding L, M, P or R for failure rate level.

WET TANTALUM: Glass to Tantalum Seal

Type W-T
CLR 65

Cap @ 25°C & 120Hz µF	Cap Tol ±%	Military Type Designation MIL-C-39006/09 Failure Rate Level L	M	P	R	Max ESR @ 120Hz ohms	Max DCL µA 25°C	85°C & 125°C	Max DF @ 120Hz %	Case Size	Tansitor Part Number ①
75 VDC @ 85°C							**50 VDC @ 125°C**				
3.5	20	8149	8354	8559	8764	10.0	1	2	2.5	1	W3.5 — 75T1M
3.5	10	8150	8355	8560	8765	10.0	1	2	2.5	1	W3.5 — 75T1K
3.5	5	8151	8356	8561	8766	10.0	1	2	2.5	1	W3.5 — 75T1J
6.8	20	8152	8357	8562	8767	8.0	1	2	4.1	1	W6.8 — 75T1M
6.8	10	8153	8358	8563	8768	8.0	1	2	4.1	1	W6.8 — 75T1K
6.8	5	8154	8359	8564	8769	8.0	1	2	4.1	1	W6.8 — 75T1J
15	20	8155	8360	8565	8770	6.5	1	5	7.5	2	W15 — 75T2M
15	10	8156	8361	8566	8771	6.5	1	5	7.5	2	W15 — 75T2K
15	5	8157	8362	8567	8772	6.5	1	5	7.5	2	W15 — 75T2J
33	20	8158	8363	8568	8773	7.0	1	10	17.5	2	W33 — 75T2M
33	10	8159	8364	8569	8774	7.0	1	10	17.5	2	W33 — 75T2K
33	5	8160	8365	8570	8775	7.0	1	10	17.5	2	W33 — 75T2J
40	20	8161	8366	8571	8776	5.0	2	12	15.2	3	W40 — 75T3M
40	10	8162	8367	8572	8777	5.0	2	12	15.2	3	W40 — 75T3K
40	5	8163	8368	8573	8778	5.0	2	12	15.2	3	W40 — 75T3J
56	20	8164	8369	8574	8779	6.0	2	17	26.0	3	W56 — 75T3M
56	10	8165	8370	8575	8780	6.0	2	17	26.0	3	W56 — 75T3K
56	5	8166	8371	8576	8781	6.0	2	17	26.0	3	W56 — 75T3J
110	20	8167	8372	8577	8782	3.1	9	36	25.7	4	W110 — 75T4M
110	10	8168	8373	8578	8783	3.1	9	36	25.7	4	W110 — 75T4K
100 VDC @ 85°C							**65 VDC @ 125°C**				
2.5	20	8169	8374	8579	8784	26.5	1	2	5.0	1	W2.5 — 100T1M
2.5	10	8170	8375	8580	8785	26.5	1	2	5.0	1	W2.5 — 100T1K
2.5	5	8171	8376	8581	8786	26.5	1	2	5.0	1	W2.5 — 100T1J
4.7	20	8172	8377	8582	8787	10.0	1	2	3.6	1	W4.7 — 100T1M
4.7	10	8173	8378	8583	8788	10.0	1	2	3.6	1	W4.7 — 100T1K
4.7	5	8174	8379	8584	8789	10.0	1	2	3.6	1	W4.7 — 100T1J
11	20	8175	8380	8585	8790	6.0	1	4	5.0	2	W11 — 100T2M
11	10	8176	8381	8586	8791	6.0	1	4	5.0	2	W11 — 100T2K
11	5	8177	8382	8587	8792	6.0	1	4	5.0	2	W11 — 100T2J
22	20	8178	8383	8588	8793	7.0	1	9	11.8	2	W22 — 100T2M
22	10	8179	8384	8589	8794	7.0	1	9	11.8	2	W22 — 100T2K
22	5	8180	8385	8590	8795	7.0	1	9	11.8	2	W22 — 100T2J
30	20	8181	8386	8591	8796	4.0	2	12	9.1	3	W30 — 100T3M
30	10	8182	8387	8592	8797	4.0	2	12	9.1	3	W30 — 100T3K
30	5	8183	8388	8593	8798	4.0	2	12	9.1	3	W30 — 100T3J
43	20	8184	8389	8594	8799	6.0	2	17	19.7	3	W43 — 100T3M
43	10	8185	8390	8595	8800	6.0	2	17	19.7	3	W43 — 100T3K
43	5	8186	8391	8596	8801	6.0	2	17	19.7	3	W43 — 100T3J
86	20	8187	8392	8597	8802	3.1	9	36	20.7	4	W86 — 100T4M
86	10	8188	8393	8598	8803	3.1	9	36	20.7	4	W86 — 100T4K
125 VDC @ 85°C							**85 VDC @ 125°C**				
1.7	20	8189	8394	8599	8804	54.6	1	2	7.0	1	W1.7 — 125T1M
1.7	10	8190	8395	8600	8805	54.6	1	2	7.0	1	W1.7 — 125T1K
1.7	5	8191	8396	8601	8806	54.6	1	2	7.0	1	W1.7 — 125T1J
3.6	20	8192	8397	8602	8807	15.0	1	2	4.1	1	W3.6 — 125T1M
3.6	10	8193	8398	8603	8808	15.0	1	2	4.1	1	W3.6 — 125T1K
3.6	5	8194	8399	8604	8809	15.0	1	2	4.1	1	W3.6 — 125T1J
9	20	8195	8400	8605	8810	15.0	1	5	10.2	2	W9 — 125T2M
9	10	8196	8401	8606	8811	15.0	1	5	10.2	2	W9 — 125T2K
9	5	8197	8402	8607	8812	15.0	1	5	10.2	2	W9 — 125T2J
14	20	8198	8403	8608	8813	12.0	1	7	12.7	2	W14 — 125T2M
14	10	8199	8404	8609	8814	12.0	1	7	12.7	2	W14 — 125T2K
14	5	8200	8405	8610	8815	12.0	1	7	12.7	2	W14 — 125 T2J
18	20	8201	8406	8611	8816	11.0	2	9	15.0	3	W18 — 125T3M
18	10	8202	8407	8612	8817	11.0	2	9	15.0	3	W18 — 125T3K
18	5	8203	8408	8613	8818	11.0	2	9	15.0	3	W18 — 125T3J
25	20	8204	8409	8614	8819	10.0	2	13	19.0	3	W25 — 125T3M
25	10	8205	8410	8615	8820	10.0	2	13	19.0	3	W25 — 125T3K
25	5	9026	9029	9032	9035	10.0	2	13	19.0	3	W25 — 125T3J
56	20	9027	9030	9033	9036	4.1	10	40	17.5	4	W56 — 125T4M
56	10	9028	9031	9034	9037	4.1	10	40	17.5	4	W56 — 125T4K

① Complete Tansitor Part Number by adding L, M, P or R for Failure Rate Level.

WET TANTALUM: Elastomer Seal

Cap @ 25°C & 120Hz µF	*Military Part Number to meet MIL-C-3965	Max ESR at 120Hz ohms	Max DCL µA		Max DF @ 120Hz %	Case Size	Tansitor Part Number
			25°C	85°C & 125°C			
6 VDC @ 85°C				**4 VDC @ 125°C**			
30.0	CL65 BB 300 MPE	4.0	1	2.0	9.1	1	W30 — 6C1 MI
68.0	CL65 BB 680 MPE	4.0	1	2.0	20.4	1	W68 — 6C1 MI
140.0	CL65 BB 141 MPE	2.0	1	3.0	21.3	2	W140 — 6C2 MI
270.0	CL65 BB 271 MPE	4.0	1	6.5	81.8	2	W270 — 6C2 MI
330.0	CL65 BB 331 MPE	2.0	2	7.9	49.6	3	W330 — 6C3 MI
560.0	CL65 BB 561 MPE	3.0	2	13.0	128.0	3	W560 — 6C3 MI
1200.0	N / A	1.6	3	14.0	144.0	4	W1200 — 6C4 MI
8 VDC @ 85°C				**5 VDC @ 125°C**			
25.0	CL65 BC 250 MPE	4.0	1	2.0	7.6	1	W25 — 8C1 MI
56.0	CL65 BC 560 MPE	4.0	1	2.0	17.0	1	W56 — 8C1 MI
220.0	CL65 BC 221 MPE	4.0	1	7.0	66.4	2	W220 — 8C2 MI
430.0	CL65 BC 431 MPE	3.0	2	14.0	91.5	3	W430 — 8C3 MI
850.0	N / A	1.0	4	16.0	65.8	4	W850 — 8C4 MI
10 VDC @ 85°C				**7 VDC @ 125°C**			
20.0	CL65 BD 200 MPE	4.0	1	2.0	6.1	1	W20 — 10C1 MI
47.0	CL65 BD 470 MPE	5.0	1	2.0	18.1	1	W47 — 10C1 MI
100.0	CL65 BD 101 MPE	2.0	1	4.0	15.2	2	W100 — 10C2 MI
180.0	CL65 BD 181 MPE	4.0	1	7.0	54.4	2	W180 — 10C2 MI
250.0	CL65 BD 251 MPE	2.0	2	10.0	37.8	3	W250 — 10C3 MI
390.0	CL65 BD 391 MPE	3.0	2	16.0	87.6	3	W390 — 10C3 MI
750.0	N / A	1.0	4	16.0	56.5	4	W750 — 10C4 MI
15 VDC @ 85°C				**10 VDC @ 125°C**			
15.0	CL65 BE 150 MPE	5.0	1	2.0	5.7	1	W15 — 15C1 MI
33.0	CL65 BE 330 MPE	5.0	1	2.0	12.5	1	W33 — 15C1 MI
70.0	CL65 BE 700 MPE	2.5	1	4.0	13.1	2	W70 — 15C2 MI
120.0	CL65 BE 121 MPE	4.0	1	7.0	36.8	2	W120 — 15C2 MI
170.0	CL65 BE 171 MPE	2.0	2	10.0	25.4	3	W170 — 15C3 MI
270.0	CL65 BE 271 MPE	3.0	2	16.0	60.9	3	W270 — 15C3 MI
540.0	N / A	1.0	6	24.0	49.0	4	W540 — 15C4 MI
25 VDC @ 85°C				**15 VDC @ 125°C**			
10.0	CL65 BG 100 MPE	6.0	1	2.0	4.6	1	W10 — 25C1 MI
22.0	CL65 BG 220 MPE	5.0	1	2.0	8.3	1	W22 — 25C1 MI
100.0	CL65 BG 101 MPE	4.0	1	10.0	31.4	2	W100 — 25C2 MI
180.0	CL65 BG 181 MPE	4.0	2	18.0	54.3	3	W180 — 25C3 MI
350.0	N / A	1.3	7	28.0	35.0	4	W350 — 25C4 MI
30 VDC @ 85°C				**20 VDC @ 125°C**			
8.0	CL65 BH 080 MPE	7.5	1	2.0	4.5	1	W8 — 30C1 MI
15.0	CL65 BH 150 MPE	8.0	1	2.0	9.1	1	W15 — 30C1 MI
40.0	CL65 BH 400 MPE	4.0	1	5.0	12.2	2	W40 — 30C2 MI
68.0	CL65 BH 680 MPE	6.0	1	8.0	31.0	2	W68 — 30C2 MI
100.0	CL65 BH 101 MPE	6.0	2	12.0	19.0	3	W100 — 30C3 MI
150.0	CL65 BH 151 MPE	2.5	2	18.0	46.0	3	W150 — 30C3 MI
300.0	N / A	1.6	8	32.0	35.0	4	W300 — 30C4 MI
50 VDC @ 85°C				**30 VDC @ 125°C**			
5.0	CL65 BJ 050 MPE	9.0	1	2.0	3.4	1	W5 — 50C1 MI
10.0	CL65 BJ 100 MPE	8.0	1	2.0	6.0	1	W10 — 50C1 MI
25.0	CL65 BJ 250 MPE	6.0	1	5.0	11.2	2	W25 — 50C2 MI
47.0	CL65 BJ 470 MPE	6.0	1	9.0	21.4	2	W47 — 50C2 MI
60.0	CL65 BJ 600 MPE	3.0	2	12.0	13.6	3	W60 — 50C3 MI
82.0	CL65 BJ 820 MPE	4.0	2	16.0	24.9	3	W82 — 50C3 MI
160.0	N / A	2.2	8	32.0	25.7	4	W160 — 50C4 MI
60 VDC @ 85°C				**40 VDC @ 125°C**			
4.0	CL65 BK 040 MPE	10.0	1	2.0	3.0	1	W4 — 60C1 MI
8.2	CL65 BK 8R2 MPE	8.0	1	2.0	5.0	1	W8.2 — 60C1 MI
20.0	CL65 BK 200 MPE	5.0	1	5.0	7.6	2	W20 — 60C2 MI
39.0	CL65 BK 390 MPE	7.0	1	9.0	20.7	2	W39 — 60C2 MI
50.0	CL65 BK 500 MPE	4.0	2	12.0	15.3	3	W50 — 60C3 MI
68.0	CL65 BK 680 MPE	6.0	2	16.0	30.7	3	W68 — 60C3 MI
140.0	N / A	2.4	8	32.0	25.7	4	W140 — 60C4 MI
75 VDC @ 85°C				**50 VDC @ 125°C**			
3.5	CL65 BL 3R5 MPE	10.0	1	2.0	2.5	1	W3.5 — 75C1 MI
6.8	CL65 BL 6R8 MPE	8.0	1	2.0	4.1	1	W6.8 — 75C1 MI
15.0	CL65 BL 150 MPE	6.5	1	5.0	7.5	2	W15 — 75C2 MI
33.0	CL65 BL 330 MPE	7.0	1	10.0	17.5	2	W33 — 75C2 MI
40.0	CL65 BL 400 MPE	5.0	2	12.0	15.2	3	W40 — 75C3 MI
56.0	CL65 BL 560 MPE	6.0	2	17.0	26.0	3	W56 — 75C3 MI
110.0	N / A	3.1	9	36.0	25.7	4	W110 — 75C4 MI
100 VDC @ 85°C				**65 VDC @ 125°C**			
2.5	CL65 BN 2R5 MPE	10.0	1	2.0	1.9	1	W2.5 — 100C1 MI
4.7	CL65 BN 4R7 MPE	10.0	1	2.0	3.6	1	W4.7 — 100C1 MI
11.0	CL65 BN 110 MPE	6.0	1	4.0	5.0	2	W11 — 100C2 MI
22.0	CL65 BN 220 MPE	7.0	1	9.0	11.8	2	W22 — 100C2 MI
30.0	CL65 BN 300 MPE	4.0	2	12.0	9.1	3	W30 — 100C3 MI
43.0	CL65 BN 430 MPE	6.0	2	17.0	19.7	3	W43 — 100C3 MI
86.0	N / A	3.1	9	36.0	20.7	4	W86 — 100C4 MI
125 VDC @ 85°C				**85 VDC @ 125°C**			
1.7	CL65 BP 1R7 MPE	15.0	1	2.0	1.9	1	W1.7 — 125C1 MI
3.6	CL65 BP 3R6 MPE	15.0	1	2.0	4.1	1	W3.6 — 125C1 MI
9.0	CL65 BP 090 MPE	15.0	1	5.0	10.2	2	W9 — 125C2 MI
14.0	CL65 BP 140 MPE	12.0	1	7.0	12.7	2	W14 — 125C2 MI
18.0	N / A	11.0	2	9.0	15.0	3	W18 — 125C3 MI
25.0	CL65 BP 250 MPE	10.0	2	13.0	19.0	3	W25 — 125C3 MI
56.0	N / A	4.1	10	40.0	17.5	4	W56 — 125C4 MI

For requirements or ratings not listed please contact your Tansitor representative or contact Tansitor Electronics Inc.
*Change CL65 to CL64 if uninsulated parts are required.
Note: All ratings also available in J (5%) and K (10%) tolerance.

WET TANTALUM: Glass to Metal Seal

Type W-H
CL 66/67

Cap @ 25°C & 120Hz µF	*Military Part Number to meet MIL-C-3965	Max ESR @ 120Hz ohms	Max DCL µA		Max DF @ 120Hz %	Case Size	Tansitor Part Number
			25°C	85°C & 125°C			
	6 VDC @ 85°C			**4 VDC @ 125°C**			
30.0	CL67 BB 300 MPG	4.0	1	2.0	9.1	1	W30 — 6H1 MI
68.0	CL67 BB 680 MPG	4.0	1	2.0	20.4	1	W68 — 6H1 MI
140.0	CL67 BB 141 MPG	2.0	1	3.0	21.3	2	W140 — 6H2 MI
270.0	CL67 BB 271 MPG	4.0	1	7.0	81.8	2	W270 — 6H2 MI
330.0	CL67 BB 331 MPG	2.0	2	8.0	49.6	3	W330 — 6H3 MI
560.0	CL67 BB 561 MPG	3.0	2	13.0	128.0	3	W560 — 6H3 MI
1200.0	N/A	1.6	3	14.0	144.0	4	W1200 — 6H4 MI
	8 VDC @ 85°C			**5 VDC @ 125°C**			
25.0	CL67 BC 250 MPG	4.0	1	2.0	7.6	1	W25 — 8H1 MI
56.0	CL67 BC 560 MPG	4.0	1	2.0	17.0	1	W56 — 8H1 MI
220.0	CL67 BC 221 MPG	4.0	1	7.0	66.4	2	W220 — 8H2 MI
430.0	CL67 BC 431 MPG	3.0	2	14.0	91.5	3	W430 — 8H3 MI
850.0	N/A	1.0	4	16.0	65.8	4	W850 — 8H4 MI
	10 VDC @ 85°C			**7 VDC @ 125°C**			
20.0	CL67 BD 200 MPG	4.0	1	2.0	6.1	1	W20 — 10H1 MI
47.0	CL67 BD 470 MPG	5.0	1	2.0	18.1	1	W47 — 10H1 MI
100.0	CL67 BD 101 MPG	2.0	1	4.0	15.2	2	W100 — 10H2 MI
180.0	CL67 BD 181 MPG	4.0	1	7.0	54.4	2	W180 — 10H2 MI
250.0	CL67 BD 251 MPG	2.0	2	10.0	37.8	3	W250 — 10H3 MI
390.0	CL67 BD 391 MPG	3.0	2	16.0	87.6	3	W390 — 10H3 MI
750.0	N/A	1.0	4	16.0	56.5	4	W750 — 10H4 MI
	15 VDC @ 85°C			**10 VDC @ 125°C**			
15.0	CL67 BE 150 MPG	5.0	1	2.0	5.7	1	W15 — 15H1 MI
33.0	CL67 BE 330 MPG	5.0	1	2.0	12.5	1	W33 — 15H1 MI
70.0	CL67 BE 700 MPG	2.5	1	4.0	13.1	2	W70 — 15H2 MI
120.0	CL67 BE 121 MPG	4.0	1	7.0	36.8	2	W120 — 15H2 MI
170.0	CL67 BE 171 MPG	2.0	2	10.0	25.4	3	W170 — 15H3 MI
270.0	CL67 BE 271 MPG	3.0	2	16.0	60.9	3	W270 — 15H3 MI
540.0	N/A	1.0	6	24.0	49.0	4	W540 — 15H4 MI
	25 VDC @ 85°C			**15 VDC @ 125°C**			
10.0	CL67 BG 100 MPG	6.0	1	2.0	4.6	1	W10 — 25H1 MI
22.0	CL67 BG 220 MPG	5.0	1	2.0	8.3	1	W22 — 25H1 MI
100.0	CL67 BG 101 MPG	4.0	1	10.0	31.4	2	W100 — 25H2 MI
180.0	CL67 BG 181 MPG	4.0	2	18.0	54.3	3	W180 — 25H3 MI
350.0	N/A	1.3	7	28.0	35.0	4	W350 — 25H4 MI
	30 VDC @ 85°C			**20 VDC @ 125°C**			
8.0	CL67 BH 080 MPG	7.5	1	2.0	4.5	1	W8 — 30H1 MI
15.0	CL67 BH 150 MPG	8.0	1	2.0	9.1	1	W15 — 30H1 MI
40.0	CL67 BH 400 MPG	4.0	1	5.0	12.2	2	W40 — 30H2 MI
68.0	CL67 BH 680 MPG	6.0	1	8.0	31.0	2	W68 — 30H2 MI
100.0	CL67 BH 101 MPG	6.0	2	12.0	19.0	3	W100 — 30H3 MI
150.0	CL67 BH 151 MPG	2.5	2	18.0	46.0	3	W150 — 30H3 MI
300 0	N/A	1.6	8	32.0	35.0	4	W300 — 30H4 MI
	50 VDC @ 85°C			**30 VDC @ 125°C**			
5.0	CL67 BJ 050 MPG	9.0	1	2.0	3.4	1	W5 — 50H1 MI
10.0	CL67 BJ 100 MPG	8.0	1	2.0	6.0	1	W10 — 50H1 MI
25.0	CL67 BJ 250 MPG	6.0	1	5.0	11.2	2	W25 — 50H2 MI
47.0	CL67 BJ 470 MPG	6.0	1	9.0	21.4	2	W47 — 50H2 MI
60.0	CL67 BJ 600 MPG	3.0	2	12.0	13.6	3	W60 — 50H3 MI
82.0	CL67 BJ 820 MPG	4.0	2	16.0	24.9	3	W82 — 50H3 MI
160.0	N/A	2.2	8	32.0	25.7	4	W160 — 50H4 MI
	60 VDC @ 85°C			**40 VDC @ 125°C**			
4.0	CL67 BK 040 MPG	10.0	1	2.0	3.0	1	W4 — 60H1 MI
8.2	CL67 BK 8R2 MPG	8.0	1	2.0	5.0	1	W8.2 — 60H1 MI
20.0	CL67 BK 200 MPG	5.0	1	5.0	7.6	2	W20 — 60H2 MI
39.0	CL67 BK 390 MPG	7.0	1	9.0	20.7	2	W39 — 60H2 MI
50.0	CL67 BK 500 MPG	4.0	2	12.0	15.3	3	W50 — 60H3 MI
68.0	CL67 BK 680 MPG	4.0	2	16.0	20.7	3	W68 — 60H3 MI
140.0	N/A	2.4	8	32.0	25.7	4	W140 — 60H4 MI
	75 VDC @ 85°C			**50 VDC @ 125°C**			
3.5	CL67 BL 3R5 MPG	10.0	1	2.0	2.5	1	W3.5 — 75H1 M1
6.8	CL67 BL 6R8 MPG	8.0	1	2.0	4.1	1	W6.8 — 75H1 MI
15.0	CL67 BL 150 MPG	6.5	1	5.0	7.5	2	W15 — 75H2 MI
33.0	CL67 BL 330 MPG	7.0	1	10.0	17.5	2	W33 — 75H2 MI
40.0	CL67 BL 400 MPG	5.0	2	12.0	15.2	3	W40 — 75H3 MI
56.0	CL67 BL 560 MPG	6.0	2	17.0	26.0	3	W56 — 75H3 MI
110.0	N/A	3.1	9	36.0	25.7	4	W110 — 75H4 MI
	100 VDC @ 85°C			**65 VDC @ 12,5°C**			
2.5	CL67 BN 2R5 MPG	26.5	1	2.0	5.0	1	W2.5 — 100H1 MI
4.7	CL67 BN 4R7 MPG	10.0	1	2.0	3.6	1	W4.7 — 100H1 MI
11.0	CL67 BN 110 MPG	6.0	1	4.0	5.0	2	W11 — 100H2 MI
22.0	CL67 BN 220 MPG	7.0	1	9.0	11.8	2	W22 — 100H2 MI
30.0	CL67 BN 300 MPG	4.0	2	12.0	9.1	3	W30 — 100H3 MI
43.0	CL67 BN 430 MPG	6.0	2	17.0	19.7	3	W43 — 100H3 MI
86.0	N/A	3.1	9	36.0	20.7	4	W86 — 100H4 MI
	125 VDC @ 85°C			**85 VDC @ 125°C**			
1.7	CL67 BP 1R7 MPG	54.6	1	2.0	7.0	1	W1.7 — 125H1 MI
3.6	CL67 BP 3R6 MPG	15.0	1	2.0	4.1	1	W3.6 — 125H1 MI
9.0	CL67 BP 090 MPG	15.0	1	5.0	10.2	2	W9 — 125H2 MI
14.0	CL67 BP 140 MPG	12.0	1	7.0	12.7	2	W14 — 125H2 MI
18.0	N/A	11.0	2	9.0	15.0	3	W18 — 125H3 MI
25.0	CL67 BP 250 MPG	10.0	2	13.0	19.0	3	W25 — 125H3 MI
56.0	N/A	4.1	10	40.0	17.5	4	W56 — 125H4 MI

For requirements or ratings not listed please contact your Tansitor representative or contact Tansitor Electronics Inc.
*Change CL67 to CL66 if uninsulated parts are required.
Note: All ratings also available in J (5%) and K (10%) tolerance.

WET TANTALUM: High Capacitance

PRODUCT FEATURES

- High Capacitance
- Polar
- Elastomer or Glass Seal
- Low D.C. Leakage
- Operating Range -55°C to +85°C and with Voltage Derating to +125°C
- Voltage Range 6 to 125VDC
- Capacitance Range 22 to 1500μF

Tansitor's Type UW capacitors are porous anode types which use high purity, high capacitance tantalum powder pressed and sintered into an anode slug to achieve the highest capacitance values obtainable consistent with good design practice. The result is capacitance values up to twice those previously available in the same physical size. A silver case which has been specially processed to compliment the anode serves as the container and cathode connection. The dielectric material is tantalum pentoxide and the electrolyte is concentrated sulfuric acid.

APPLICATIONS

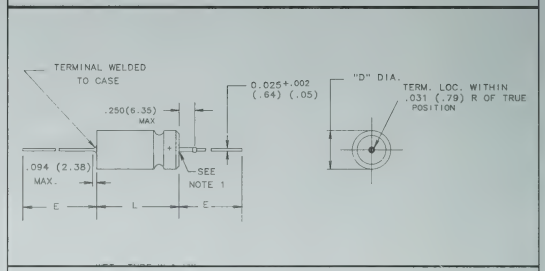
The low DC leakage of these porous anode tantalum capacitors makes them particularly well suited for low voltage solid state circuit and timing applications. The high capacitance per unit volume makes them an excellent choice for filtering and storage applications.

AC Ripple:

These capacitors are suitable for AC ripple applications only when all of the following conditions are met:

— Sufficient DC bias is applied to prevent a reversal of polarity on the capacitor.
— The sum of the DC bias and the AC peak voltage should not exceed the DC voltage rating of the capacitor.
— The ripple current should be limited to the equivalent heating effect of sinusoidal ripple currents which are listed as maximum allowable by case size in the table below:

Case Size	Maximum Allowable AC RMS Ripple
1	50mA @ 85°C 40mA @ 125°C
2	250mA @ 85°C 200mA @ 125°C
3	500mA @ 85°C 400mA @ 125°C
4	700mA @ 85°C 600mA @ 125°C



Dimensions—Millimeters

Case Size	D Max Insulated	D±.41 Uninsulated	L + .79 -.41	E±6.35
1	5.56	4.78	11.51	38.10
2	7.92	7.14	16.28	57.15
3	10.31	9.53	19.46	57.15
4	10.31	9.53	26.98	57.15

Dimensions—Inches

Case Size	D Max Insulated	D±.016 Uninsulated	L + .031 -.016	E±.250
1	.219	.188	.453	1.500
2	.312	.281	.641	2.250
3	.406	.375	.766	2.250
4	.406	.375	1.062	2.250

Notes:

1. Material at egress is tantalum wire for C seal type, metal feed thru for H seal type and tantalum feed thru for T seal type.
2. Heat shrinkable insulation will lap over the ends of the capacitor body.

Seals:

There are three seal types available on the type UW. The desired seal may be ordered by inserting the appropriate letter designation in the part number code; C for elastomer seal, H for glass to metal hermetic seal, T for a glass to tantalum hermetic seal.

WET TANTALUM: High Capacitance — Type UW

STANDARD RATINGS

Tansitor Part Number	Capacitance @ 25°C & 120 Hz µF	Rated DC Voltage @ 85°C	Rated DC Voltage @ 125°C	Max DF @ 120 Hz %	Max Imp @ -55°C & 120 Hz ohms	Max DCL µA		Maximum Capacitance Change %		
						25°C	85°C & 125°C	-55°C	+85°C	+125°C
UW100 — 6*1MI	100	6	4	21.3	54	2	9	-40	+14	+16
UW300 — 6*2MI	300	6	4	55	40	2	9	-70	+14	+16
UW1500 — 6*3MI	1500	6	4	172	18	5	20	-90	+20	+25
UW100 — 8*1MI	100	8	5	21	40	1	3	-46	+14	+16
UW300 — 8*2MI	300	8	5	75	24	1	7	-45	+18	+21
UW1000 — 8*3MI	1000	8	5	145	22	4	20	-80	+20	+25
UW1200 — 8*4M I	1200	8	5	130	19	5	20	-85	+20	+25
UW1200 — 10*3MI	1200	10	7	137	18	5	20	-88	+20	+25
UW100 — 15*1MI	100	15	10	30	72	2	9	-44	+13	+16
UW290 — 15*2MI	290	15	10	52	50	3	16	-55	+14	+18
UW560 — 15*3MI	560	15	10	80	32	4	20	-75	+20	+25
UW700 — 15*4MI	700	15	10	92	24	6	22	-74	+18	+24
UW68 — 25*1MI	68	25	15	22	90	2	9	-40	+12	+15
UW270 — 25*2MI	270	25	15	55	33	3	16	-62	+13	+16
UW560 — 25*3MI	560	25	15	76	24	7	28	-72	+20	+25
UW680 — 25*4M I	680	25	15	63	19	8	32	-72	+25	+30
UW50 — 30*1MI	50	30	20	22	100	2	9	-38	+12	+15
UW220 — 30*2MI	220	30	20	42	36	3	16	-60	+13	+16
UW470 — 30*3MI	470	30	20	64	25	8	32	-65	+20	+25
UW33 — 50*1MI	33	50	30	12	135	2	9	-29	+10	+12
UW120 — 50*2M I	120	50	30	22	49	4	24	-42	+12	+15
UW270 — 50*3M I	270	50	30	37	29	8	32	-46	+20	+25
UW22 — 60*1MI	22	60	40	10	150	3	12	-24	+10	+12
UW100 — 60*2MI	100	60	40	19	54	4	20	-36	+12	+15
UW150 — 60*3MI	150	60	40	26	39	8	32	-40	+16	+20
UW22 — 75*1MI	22	75	50	8.5	157	3	12	-19	+10	+12
UW56 — 75*2MI	56	75	50	13	77	3	15	-30	+12	+15
UW120 — 75*3MI	120	75	50	22	42	8	28	-33	+16	+20
UW100 — 100*4MI	100	100	65	23	32	12	48	-33	+15	+17
UW56 — 125*3MI	56	125	85	9	48	10	40	-28	+14	+16

For requirements or ratings other than those listed, please contact your Tansitor representative or contact Tansitor Electronics Inc.

PART NUMBER CODE

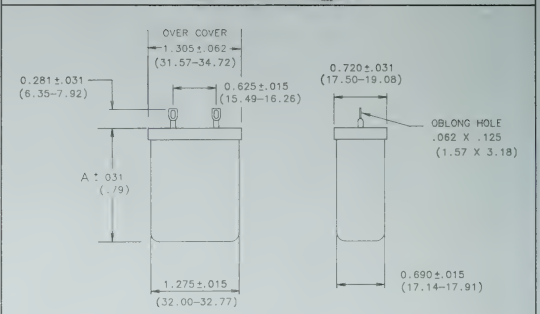
UW	82	50	* T	2	M	I
Capacitor Type UW High Capacitance Series	Capacitance in µF	85°C Rated DC Voltage	Seal: C-Elastomer, H-Hermetic Glass to Metal, T-Tantalum To Glass Hermetic	Case Size: (See Outline Dimensions)	Tolerance M ±20% K ±10%	Insulation I Insulated X Uninsulated

* Insert code letter to indicate type of seal required.

PRODUCT FEATURES

- High Capacitance Values
- Hermetically Sealed
- Low DC Leakage
- Operating Range -55°C to +85°C and with voltage derating to +125°C
- Voltage Range 15 to 150VDC
- Capacitance Range 70 to 2400μF
- Low Dissipation Factor

Tansitor's Type RW capacitors are hermetically packaged assemblies of W Type capacitors. The individual cell units are carefully assembled in an outer metal case resulting in very high capacitance values and low series resistance. Tansitor's Type RW is designed and manufactured to meet the requirements of Mil-C-3965.



Case Size	Millimeters A	Inches A
1	26.97	1.062
2	34.93	1.375
3	41.28	1.625
4	50.80	2.000
5	63.50	2.500

AC Ripple:

For RMS ripple current ratings please contact the factory.

EQUIVALENT MILITARY SPECIFICATIONS

Type RW Capacitors are equivalent to Style CL55 of Mil-C-3965.

MECHANICAL DATA

Construction: Type RW capacitors are hermetically sealed assemblies of Type W capacitors.

Insulation: No insulation is provided for the outer case. However, both anode and cathode terminals are insulated from the case.

Terminals: Solder coated eyelet terminals are provided for ease in making electrical connections.

Marking: Standard marking includes Tansitor Part Number or Mil Part Number, capacitance in microfarads, 85°C rated DC voltage, polarity symbol, tolerance designation, source and date code. Special marking is available upon request.

PART NUMBER CODE					
RW	1000	50	H	5	M
Capacitor Type RW Rectangular Wet Assembly Mil Style CL55	Capacitance μF	85°C Rated DC Voltage	Glass to Metal Hermetic Seal	Case Size: (See Outline Dimensions)	Cap. Tolerance M ±20% K ±10% J ± 5%

WET TANTALUM: Assemblies

Type RW
CL 55

Cap @ 25°C & 120Hz µF	Military Part Number to meet MIL-C-3965	Max DF @ 25°C & 120 Hz %	Max Imp @ -55°C & 120 Hz ohms	Max DCL µA		Tansitor Part Number
				25°C	85°C & 125°C	
	15 VDC @ 85°C			**10 VDC @ 125°C**		
960	CL55 BE 961 MPG	15	3.1	7	58	RW960 — 15H 1M
1200	CL55 BE 122 MPG	15	2.3	9	72	RW1200 — 15H 2M
1400	CL55 BE 142 MPG	15	1.7	11	84	RW1400 — 15H 3M
2100	CL55 BE 212 MPG	15	1.3	16	126	RW2100 — 15H 4M
2400	CL55 BE 242 MPG	15	1.15	18	144	RW2400 — 15H 5M
	30 VDC @ 85°C			**20 VDC @ 125°C**		
520	CL55 BH 521 MPG	15	5.3	8	63	RW520 — 30H 1M
660	CL55 BH 661 MPG	15	4.2	10	80	RW660 — 30H 2M
820	CL55 BH 821 MPG	15	2.9	13	99	RW820 — 30H 3M
1200	CL55 BH 122 MPG	15	2.3	18	144	RW1200 — 30H 4M
1300	CL55 BH 132 MPG	15	2.1	20	156	RW1300 — 30H 5M
	50 VDC @ 85°C			**30 VDC @ 125°C**		
400	CL55 BJ 401 MPG	15	7.2	10	80	RW400 — 50H 1M
430	CL55 BJ 431 MPG	15	6.4	10	78	RW430 — 50H 1M
500	CL55 BJ 501 MPG	15	5.6	13	100	RW500 — 50H 2M
600	CL55 BJ 601 MPG	15	4.1	15	120	RW600 — 50H 3M
800	CL55 BJ 801 MPG	15	3.1	20	160	RW800 — 50H 4M
1000	CL55 BJ 102 MPG	15	2.8	23	180	RW1000 — 50H 5M
	75 VDC @ 85°C			**50 VDC @ 125°C**		
270	CL55 BL 271 MPG	12	8.5	9	81	RW270 — 75H 1M
330	CL55 BL 331 MPG	12	7.0	12	99	RW330 — 75H 2M
400	CL55 BL 401 MPG	12	5.0	15	119	RW400 — 75H 3M
600	CL55 BL 601 MPG	12	3.65	23	180	RW600 — 75H 4M
660	CL55 BL 661 MPG	12	3.5	25	198	RW660 — 75H 5M
	100 VDC @ 85°C			**65 VDC @ 125°C**		
170	CL55 BN 171 MPG	12	15.0	9	68	RW170 — 100H 1M
220	CL55 BN 221 M PG	12	11.6	11	88	RW220 — 100H 2M
260	CL55 BN 261 MPG	12	8.0	13	104	RW260 — 100H 3M
350	CL55 BN 351 MPG	12	6.5	18	140	RW350 — 100H 4M
440	CL55 BN 441 MPG	12	5.8	22	176	RW440 — 100H 5M
	150 VDC @ 85°C			**100 VDC @ 125°C**		
70	CL55 BQ 700 MPG	12	28.8	6	42	RW70 — 150H 1M
90	CL55 BQ 900 MPG	12	22.4	7	54	RW90 — 150H 2M
100	CL55 BQ 101 MPG	12	16.4	8	60	RW100 — 150H 3M
140	CL55 BQ 141 MPG	12	12.4	11	84	RW140 — 150H 4M
180	CL55 BQ 181 MPG	12	11.2	14	104	RW180 — 150H 5M

For requirements or ratings other than those listed, please contact your Tansitor representative or contact Tansitor Electronics Inc

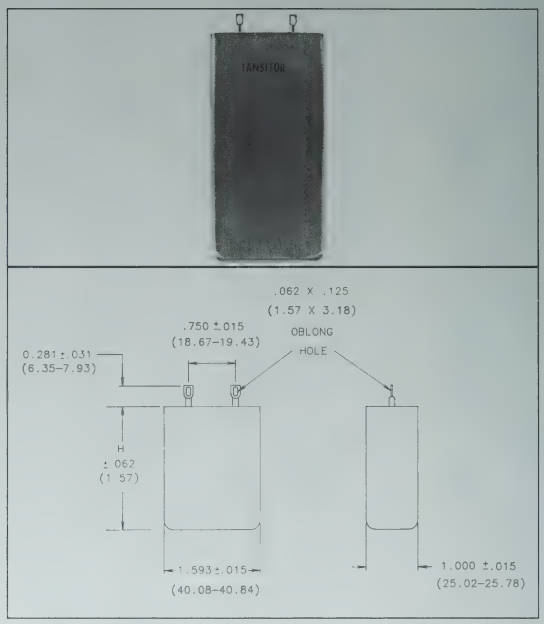
WET TANTALUM: Assemblies

These units are dual rated for operation at either 85°C or 125°C at their specified voltage rating and their advantages include:

- High capacitance per unit volume
- Low leakage current
- Low power factor
- Long shelf and operation life

Tansitor Type RWB are porous wet sintered anode capacitors manufactured to meet the requirements of the current revision of military specification MIL-C-3965. Type RWB capacitors also meet the environmental requirements of MIL-C-3965 when tested in accordance with MIL-STD-202.

Type RWB capacitors are used extensively in coupling, filter, by-pass and energy storage in aerospace, military and industrial applications for communications, controls and navigation.



Case Size	H±0.062
1	1.500
2	1.875
3	2.250
4	2.625
5	3.000
6	3.375
7	3.750

NOTE: All dimensions in inches.

PART NUMBER CODE					
RW	7200	6	B	1	M
Capacitor Type RW Rectalgular Wet Assembly	Capacitance in µF	85°C Rated DC Voltage	Case Style	Case Size (See Outline Dimensions)	Cap Tolerance M ±20% K ±10% J ± 5%

Cap @ 25°C & 120Hz µF	Max DF @ 25°C & 120 Hz %	Max Imp @ -55°C & 120 Hz ohms	Max DCL µA		Tansitor Part Number
			25°C	85°C & 125°C	
		6 VDC @ 85°C		4 VDC @ 125°C	
7200	78.8	3.3	22	170	RW7200 — 6B 1M
9600	78.8	2.5	29	200	RW9600 — 6B 2M
12000	78.8	2.0	36	280	RW12000 — 6B 3M
14000	78.8	1.7	42	330	RW14000 — 6B 4M
17000	78.8	1.4	51	400	RW17000 — 6B 5M
19000	78.8	1.2	57	450	RW19000 — 6B 6M
22000	78.8	1.1	66	520	RW22000 — 6B 7M
		8 VDC @ 85°C		5 VDC @ 125°C	
5100	67.5	3.7	20	160	RW5100 — 8B 1M
6800	67.5	2.8	27	210	RW6800 — 8B 2M
8500	67.5	2.2	34	270	RW8500 — 8B 3M
10000	67.5	1.8	40	320	RW10000 — 8B 4M
12000	67.5	1.6	48	380	RW12000 — 8B 5M
14000	67.5	1.4	56	440	RW14000 — 8B 6M
15000	67.5	1.2	60	480	RW15000 — 8B 7M
		10 VDC @ 85°C		7 VDC @ 125°C	
4500	65.9	3.8	22	180	RW4500 — 10B 1M
6000	65.9	2.9	30	240	RW6000 — 10B 2M
7500	65.9	2.3	37	300	RW7500 — 10B 3M
9000	65.9	1.8	45	360	RW9000 — 10B 4M
10000	65.9	1.5	50	400	RW10000 — 10B 5M
12000	65.9	1.4	60	480	RW12000 — 10B 6M
14000	65.9	1.3	70	560	RW14000 — 10B 7M

WET TANTALUM: Assemblies

Type RWB

Cap @ 25°C & 120Hz µF	Max DF @ 25°C & 120 Hz %	Max Imp @ -55°C & 120 Hz ohms	Max DCL µA		Tansitor Part Number
			25°C	85°C & 125°C	
15 VDC @ 85°C			**10 VDC @ 125°C**		
3200	52.0	3.8	24	190	RW3200 — 15B1M
4300	52.0	2.9	32	250	RW4300 — 15B2M
5400	52.0	2.3	40	320	RW5400 — 15B3M
6500	52.0	1.9	48	390	RW6500 — 15B4M
7600	52.0	1.6	57	450	RW7600 — 15B5M
8600	52.0	1.4	64	510	RW8600 — 15B6M
9700	52.0	1.3	72	580	RW9700 — 15B7M
25 VDC @ 85°C			**15 VDC @ 125°C**		
2100	47.7	4.0	26	210	RW2100 — 25B1M
2800	47.7	3.0	35	280	RW2800 — 25B2M
3500	47.7	2.4	43	350	RW3500 — 25B3M
4200	47.7	2.0	52	420	RW4200 — 25B4M
4900	47.7	1.7	61	490	RW4900 — 25B5M
5600	47.7	1.5	70	560	RW5600 — 25B6M
6300	47.7	1.3	78	630	RW6300 — 25B7M
30 VDC @ 85°C			**20 VDC @ 125°C**		
1800	41.5	4.2	27	210	RW1800 — 30B1M
2400	41.5	3.1	36	280	RW2400 — 30B2M
3000	41.5	2.5	45	360	RW3000 — 30B3M
3600	41.5	2.1	54	430	RW3600 — 30B4M
4200	41.5	1.8	63	500	RW4200 — 30B5M
4800	41.5	1.6	72	570	RW4800 — 30B6M
5400	41.5	1.4	81	640	RW5400 — 30B7M
50 VDC @ 85°C			**30 VDC @ 125°C**		
960	24.2	4.5	24	190	RW960 — 50B1M
1300	24.2	3.4	32	260	RW1300 — 50B2M
1600	24.2	2.7	40	320	RW1600 — 50B3M
1900	24.2	2.3	47	380	RW1900 — 50B4M
2200	24.2	1.9	55	440	RW2200 — 50B5M
2600	24.2	1.7	65	520	RW2600 — 50B6M
2900	24.2	1.5	72	580	RW2900 — 50B7M
60 VDC @ 85°C			**40 VDC @ 125°C**		
840	29.3	4.7	25	200	RW840 — 60B1M
1100	29.3	3.5	33	260	RW1100 — 60B2M
1400	29.3	2.8	42	330	RW1400 — 60B3M
1700	29.3	2.3	51	400	RW1700 — 60B4M
2000	29.3	2.0	60	480	RW2000 — 60B5M
2200	29.3	1.8	66	520	RW2200 — 60B6M
2500	29.3	1.6	75	600	RW2500 — 60B7M
75 VDC @ 85°C			**50 VDC @ 125°C**		
660	24.9	4.8	24	200	RW660 — 75B1M
880	24.9	3.6	33	260	RW880 — 75B2M
1100	24.9	2.9	41	330	RW1100 — 75B3M
1400	24.9	2.4	52	420	RW1400 — 75B4M
1500	24.9	2.1	56	450	RW1500 — 75B5M
1800	24.9	1.8	67	540	RW1800 — 75B6M
2000	24.9	1.6	75	600	RW2000 — 75B7M
100 VDC @ 85°C			**65 VDC @ 125°C**		
510	19.3	5.0	25	200	RW510 — 100B1M
680	19.3	3.8	34	270	RW680 — 100B2M
850	19.3	3.0	42	340	RW850 — 100B3M
1000	19.3	2.5	50	400	RW1000 — 100B4M
1200	19.3	2.1	60	480	RW1200 — 100B5M
1400	19.3	1.9	70	560	RW1400 — 100B6M
1500	19.3	1.7	75	600	RW1500 — 100B7M
125 VDC @ 85°C			**85 VDC@125°C**		
340	18.7	5.5	21	170	RW340 — 125B1M
450	18.7	4.1	28	220	RW450 — 125B2M
560	18.7	3.3	35	280	RW560 — 125B3M
670	18.7	2.8	41	330	RW670 — 125B4M
790	18.7	2.4	49	390	RW790 — 125B5M
900	18.7	2.1	56	450	RW900 — 125B6M
1000	18.7	1.8	62	500	RW1000 — 125B7M

For requirements or ratings not listed please contact your Tansitor representative or contact Tansitor Electronics Inc

CUSTOM DESIGNED ASSEMBLIES

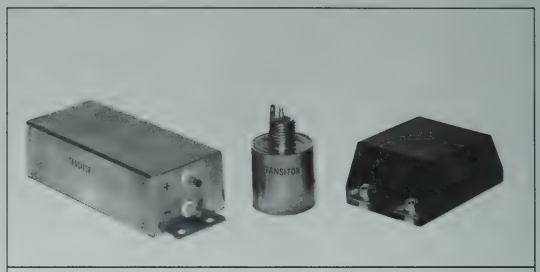
Custom designed tantalum capacitors are an important tool for circuit designers faced with extra high capacitance/voltage requirements not met by standard units.

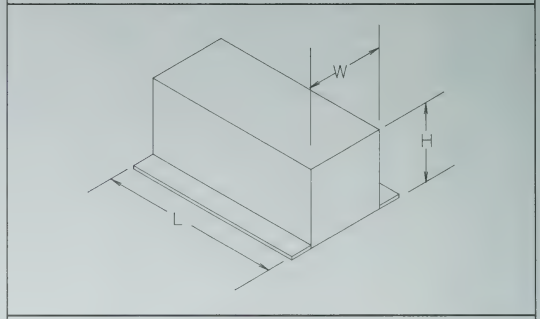
In most cases, Tansitor Type CM units have employed tantalum foil internally. By its nature, however, a CM unit may employ internal sections of solid, wet sintered anode or combinations of all three types. Deciding which tantalum capacitor to use in such units means picking the best possible combination of parameters for the complete package. Dual or plural ratings are available in a single case or other components can be potted in the same case with capacitors.

Type CM capacitors of various styles have been used in military, space and industrial applications for many years. Although the most common use is found in compact or miniature power supplies, the CM proves valuable in any application where high capacitance and critical space limitations exist or where multiple functions are required in one package.

Because tantalum capacitors can be designed to provide a wide range of parameters, they allow simplified circuit design and lower cost components. Reliability depends on the capacitor elements used, while cost reflects both type and quantity required.

Some of the more popular CM sizes are shown in the dimension table. Please contact Tansitor's Applications Department for more information and guidance in designing your specific requirements for CM type capacitors.





Dimensions—Inches		
H±.062	W±.062	L±.062
.562	1.562	3.875
1.062	1.562	3.875
1.062	2.062	3.875
2.062	2.562	3.875
2.562	3.062	3.875
3.062	3.562	3.875
3.562	3.562	3.875

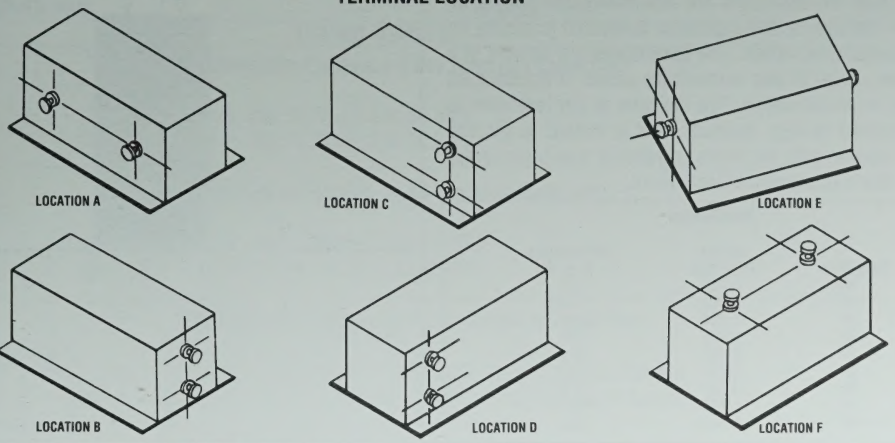
Dimensions—Millimeters		
H±1.6	W±1.6	L±1.6
14.3	39.7	98.4
27.0	39.7	98.4
27.0	52.4	98.4
52.4	65.1	98.4
65.1	77.8	98.4
77.8	90.5	98.4
90.5	90.5	98.4

Capacitance-Voltage Range			
Capacitance		Voltage	
Min	Max	Min	Max
28	19500	3	300
57	35000	3	300
110	78000	3	300
190	130000	3	300
280	230000	3	300
400	270000	3	300
470	310000	3	300

PART NUMBER CODE - SINGLE RATING						
CM	1600	30	B	E	I	V
Tansitor Type	Capacitance in µF	Voltage at rated temperature	Temperature Characteristic (B = 85°C, C = 125°C)	Terminal Location	Terminal Style	Flange Location

PART NUMBER CODE - DUAL RATING								
CM	3400 / 1300		10 / 25		C	CD	2	G
Tansitor Type	Capacitance of first section in µF	Capacitance of second section in µF	Voltage of first section at rated temperature	Voltage of second section at rated temperature	Temperature Characteristic (B = 85°C, C = 125°C)	Terminal Location (2 Letters)	Terminal Style	Flange Location

TERMINAL LOCATION



TERMINAL TYPE (see notes under Figure 2)

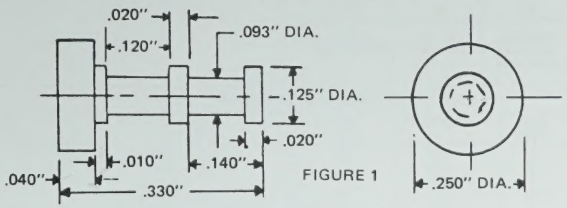


FIGURE 1

THE MAXIMUM TORQUE WHICH MAY BE APPLIED TO THIS TYPE OF TERMINAL IS 18 inch-pounds.

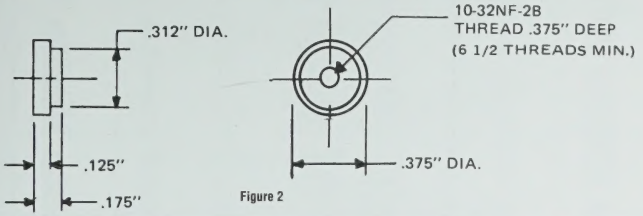


Figure 2

NOTE:
1. Terminal portions shown outside of case
2. Tolerance unless otherwise specifled is ±0.005 inches.
3. Figure 2 Teflon Insulation supplied in Red, White, or Black.

FLANGE LOCATION (see notes below)

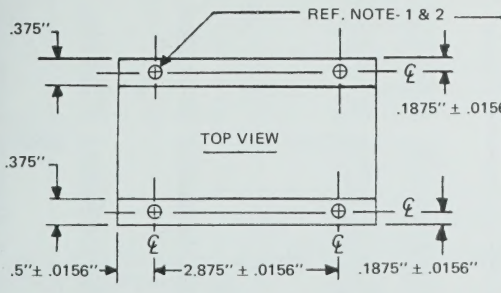


Figure V

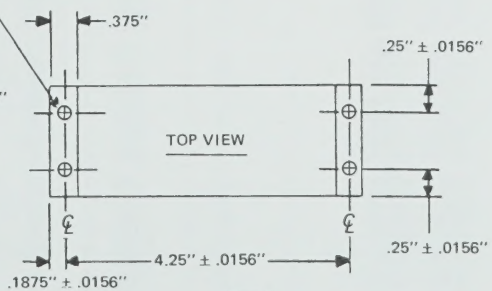
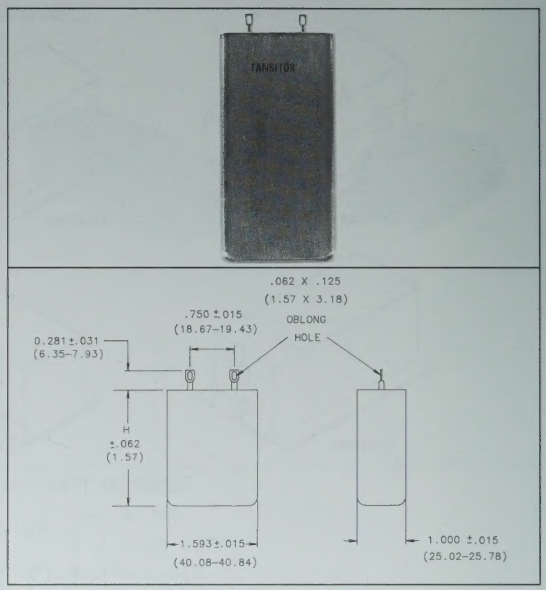


Figure G

NOTE:
1. Mounting hole size is 0.161 inches in diameter unless otherwise specified.
2. Locations as shown are maximum. Mounting holes may be placed closer together if specified but mounting holes may not be located directly beneath terminals.
3. Bottom cover is normally welded to flange. Cover may be attached with hollow eyelets at mounting holes if specified.

WET TANTALUM: All Tantalum Assemblies

Tansitor Type RA capacitors are assemblies using tantalum cased, hermetically sealed capacitors connected in parallel for higher capacitance values. The assemblies are housed in a metal case, which is also hermetically sealed. A standard list of ratings is shown below. The designer is not restricted to these standard ratings, however, and is invited to discuss specific requirements for series, parallel or non-polar arrays with Tansitor's Applications Department.



Dimensions

Case Size	Inches H ±0.062	Millimeters H ±1.6
BX	.703	17.9
B0	1.094	27.8
B1	1.500	38.1
B2	1.875	47.6
B3	2.250	57.2
B4	2.625	66.7
B5	3.000	76.2
B6	3.375	85.7
B7	3.750	95.3

PART NUMBER CODE

RA	4400	6	BX	M	P
Tansitor Capacitor Type	Capacitance in µF	85°C Rated DC Voltage	Case Size See Outline Dimensions	Cap. Tol. M = ±20% K = ±10% J = ± 5%	P-Polar NP- Non-polar

STANDARD RATINGS

Tansitor Part Number	85°C WVDC	Capacitance µF	Case Size	Tansitor Part Number	85°C WVDC	Capacitance µF	Case Size
RA4400 — 6BXMP	6	4400	BX	RA5600 — 30B3MP	30	5600	B3
RA8800 — 6B0MP	6	8800	B0	RA6700 — 30B4MP	30	6700	B4
RA13000 — 6B1MP	6	13000	B1	RA7800 — 30B5MP	30	7800	B5
RA17000 — 6B2MP	6	17000	B2	RA8900 — 30B6MP	30	8900	B6
RA22000 — 6B3MP	6	22000	B3	RA10000 — 30B7MP	30	10000	B7
RA26000 — 6B4MP	6	26000	B4				
RA30000 — 6B5MP	6	30000	B5	RA660 — 50BXMP	50	660	BX
RA35000 — 6B6MP	6	35000	B6	RA1300 — 50B0MP	50	1300	B0
RA39000 — 6B7MP	6	39000	B7	RA1900 — 50B1MP	50	1900	B1
				RA2600 — 50B2MP	50	2600	B2
RA3600 — 8BXMP	8	3600	BX	RA3300 — 50B3MP	50	3300	63
RA7200 — 8B0MP	8	7200	B0	RA3900 — 50B4MP	50	3900	B4
RA10000 — 8B1MP	8	10000	B1	RA4600 — 50B5MP	50	4600	B5
RA14000 — 8B2MP	8	14000	B2	RA5200 — 50B6MP	50	5200	B6
RA18000 — 8B3MP	8	18000	B3	RA5900 — 50B7MP	50	5900	B7
RA21000 — 8B4MP	8	21000	B4				
RA25000 — 8B5MP	8	25000	B5	RA540 — 60BXMP	60	540	BX
RA28000 — 8B6MP	8	28000	B6	RA1000 — 60B0MP	60	1000	B0
RA32000 — 8B7MP	8	32000	B7	RA1600 — 60B1MP	60	1600	B1
				RA2100 — 60B2MP	60	2100	B2
RA3000 — 10BXMP	10	3000	BX	RA2700 — 60B3MP	60	2700	B3
RA6000 — 10B0MP	10	6000	B0	RA3200 — 60B4MP	60	3200	B4
RA9000 — 10B1MP	10	9000	B1	RA3700 — 60B5MP	60	3700	B5
RA12000 — 10B2MP	10	12000	B2	RA4300 — 60B6MP	60	4300	B6
RA15000 — 10B3MP	10	15000	B3	RA4800 — 60B7MP	60	4800	B7
RA18000 — 10B4MP	10	18000	B4				
RA21000 — 10B5MP	10	21000	B5	RA440 — 75BXMP	75	440	BX
RA24000 — 10B6MP	10	24000	B6	RA880 — 75B0MP	75	880	B0
RA27000 — 10B7MP	10	27000	B7	RA1300 — 75B1MP	75	1300	B1
				RA1700 — 75B2MP	75	1700	B2
RA2000 — 15BXMP	15	2000	BX	RA2200 — 75B3MP	75	2200	B3
RA4000 — 15B0MP	15	4000	B0	RA2600 — 75B4MP	75	2600	B4
RA6000 — 15B1MP	15	6000	B1	RA3000 — 75B5MP	75	3000	B5
RA8000 — 15B2MP	15	8000	B2	RA3500 — 75B6MP	75	3500	B6
RA10000 — 15B3MP	15	10000	B3	RA3900 — 75B7MP	75	3900	B7
RA12000 — 15B4MP	15	12000	B4				
RA14000 — 15B5MP	15	14000	B5	RA240 — 100BXMP	100	240	BX
RA16000 — 15B6MP	15	16000	B6	RA480 — 100B0MP	100	480	B0
RA18000 — 15B7MP	15	18000	B7	RA720 — 100B1MP	100	720	B1
				RA960 — 100B2MP	100	960	B2
RA1300 — 25BXMP	25	1300	BX	RA1200 — 100B3MP	100	1200	B3
RA2700 — 25B0MP	25	2700	B0	RA1400 — 100B4MP	100	1400	B4
RA4000 — 25B1MP	25	4000	B1	RA1600 — 100B5MP	100	1600	B5
RA5400 — 25B2MP	25	5400	B2	RA1900 — 100B6MP	100	1900	B6
RA6800 — 25B3MP	25	6800	B3	RA2100 — 100B7MP	100	2100	B7
RA8100 — 25B4MP	25	8100	B4				
RA9500 — 25B5MP	25	9500	B5	RA164 — 1125BXMP	125	164	BX
RA10000 — 25B6MP	25	10000	B6	RA328 — 1255B0MP	125	328	B0
RA12000 — 25B7MP	25	12000	B7	RA490 — 125B1MP	125	490	B1
				RA650 — 125B2MP	125	650	B2
RA1100 — 30BXMP	30	1100	BX	RA820 — 125B3MP	125	820	B3
RA2200 — 30B0MP	30	2200	B0	RA980 — 125B4MP	125	980	B4
RA3300 — 30B1MP	30	3300	B1	RA1150 — 125B5MP	125	1150	B5
RA4400 — 30B2MP	30	4400	B2	RA1300 — 125B6MP	125	1300	B6
				RA1475 — 125B7MP	125	1475	B7

For requirements or ratings not listed please contact your Tansitor representative or contact Tansitor Electronics, Inc.

SOLID TANTALUM CAPACITOR SUMMARY

DESIGNATION	DESCRIPTION
LEADED DEVICES	
HA	**Subminiature Cordwood Solid Tantalum Capacitors**
Polar	Range: .001 to 68 μF, 2 to 50 VDC
Nonpolar	Range: .001 to 33 μF, 2 to 50 VDC
TC	**Subminiature Modular Solid Tantalum Capacitors**
Polar	Range: .001 to 470 μF, 2 to 50 VDC
Nonpolar	Range: 0.1 to 68 μF, 2 to 50 VDC
SHA	**Microminiature Cordwood Solid Tantalum Capacitors**
Polar	Range: .22 to 100 μF, 2 to 35 VDC (very high capacitance)
Nonpolar	Range: .33 to 47 μF, 2 to 35 VDC (very high capacitance)
STC	**Microminiature Modular Solid Tantalum Capacitors**
Polar	Range: .22 to 470 μF, 2 to 35 VDC (very high capacitance)
Nonpolar	Range: .68 to 100 μF, 2 to 35 VDC (very high capacitance)
CX	**Subminiature Modular Solid Tantalum Capacitors**
Qualified to	Range: 0.1 to 220 μF, 2 to 35 VDC
MIL-C-49137	CX06 - Radial Leads
CX06/CX16	CX16 - Axial Leads
SURFACE MOUNT DEVICES	
SM	**Conformal Coated** Surface Mount, Chip Range: 0.047 to 10 μF, 2 to 15 VDC
MT Advance Data	**MicroTan** Ultraminiature Solid Tantalum Chip Range: .047 to 10 μF, 2 to 15 VDC
GC Advance Data	**GoldChip** Low Profile Solid Tantalum Chip Range: 0.1 to 100 μF, 4 to 50 VDC
CWR06	**MIL-C-55365/04** Low Profile Solid Tantalum Chip Range: 0.1 to 100 μF, 4 to 50 VDC

Please phone or fax for a copy of our **Solid Tantalum Capacitor Catalog**.

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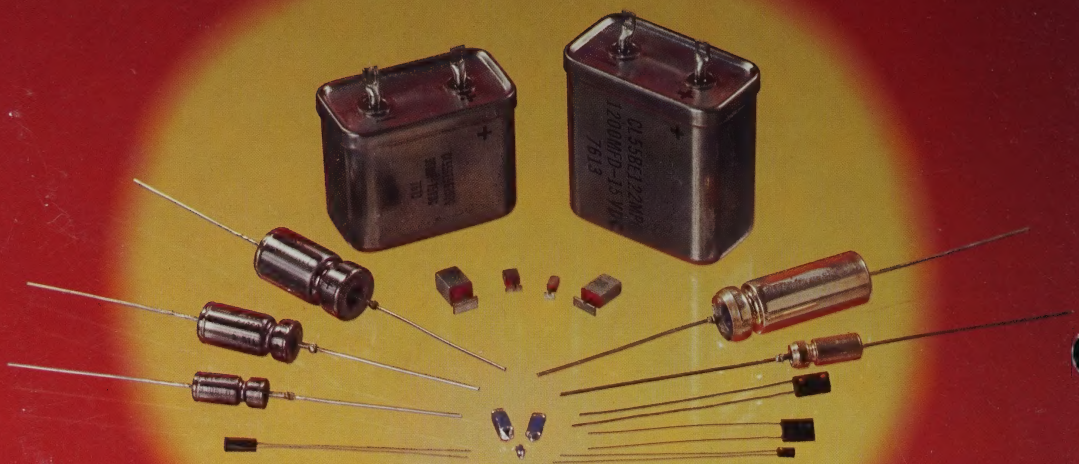

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